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IN a country where thousands of new rural homes are every year being made, how many times do the new proprietors sigh for LARGE TREES. "Ah, if one could only have half a dozen,—two or three,—nay, even a single one of the beautiful elms that waste their beauty by the road side of some unfrequented lane, or stands unappreciated in some farmer's meadow, who grudges it ground room!"

"And is there no successful way of transplanting such trees?" inquires the impatient owner of a new site, who feels that there should be some special process—some patent regenerator of that forest growth, which his predecessors have so cruelly despoiled,—his predecessors, to whom cord-wood was of more consequence than the charms of sylvan landscape.

Though there is great delight in raising a tree from a liliputian specimen no higher than one's knee,—nay, even from the seed itself,—in feeling, as it grows upward and heavenward, year by year, till the little thing that had to be sheltered with rods, stuck about it, to prevent its being overlooked and trodden upon, has so far overtopped us that it now shelters and gratefully overshadows us; though, as we have said, there is great delight in this, yet it must be part and parcel of other delights. To a person who has just "settled" upon a bare field, where he has only a new house and a "view" of his neighborhood to look at, we must not be too eloquent about the pleasure of raising oaks from the acorn. He is too much in the condition of the hungry man, who is told to be resigned, for there will be no hunger in heaven. It is the present state of affairs that, at this moment, lies nearest to him. How, in other words, shall a field, as bare as a desert, be at once enlivened with a few large trees?

Some ten or fifteen years ago, an ingenious Scotch baronet—Sir HENRY STUART—published a goodly octavo to the world, which apparently solved the whole mystery. And it was not all theory; for the baronet's own park was actually planted with forest trees of various kinds—oaks, ashes, elms, beeches, of all sizes, from twenty-five to sixty feet in height, and with fine heads. The thing was not only done, but the park was there, growing in the finest luxuriance; and half a dozen years after its creation, arboriculturists of every degree, from Sir WALTER SCOTT down to humble ditchers, went to look at it, and pronounced it good, and the thing itself altogether satisfactory.

Sir HENRY STUART's process, though it

fills a volume, may be compressed into a paragraph. First, the greatest *respect for the roots* of a tree, and some knowledge of the functions of the roots and branches; second, a pair of large wheels, with a strong axle and pole; third, practical skill and patience in executing the work.

A great many disciples had Sir HENRY; and we, among the number, bore our share in the purchase of a pair of wheels, and the cost of moving some large trees, that for the most part *failed*. And now, that Sir HENRY's mode has rather fallen into disrepute, and is looked upon as an impracticable thing for this country, it may be time well employed to look a little into the cause of its failure, and also to inquire if it is wholly and entirely a failure for us.

Undeniably, then, the main cause of the failure, here, of the Scotch mode of transplanting, lies in the difference of climate. He who knows how much the success of a newly planted tree, of small size, depends on the moist state of the atmosphere, when it begins to grow in its new position, can easily see that its importance is vastly greater to a large tree than a small one. It is the thirst of a giant and the sufferings of a giant, accustomed to a large supply of food, compared with that of a little child, which may be fed by the spoonful. And when we compare the moisture of that foggy and weeping climate of Scotia, with the hot, bright, dry atmosphere of the United States, we can easily see that a tree at all stubborn, moved by Sir HENRY himself, and inclined to grow, would actually perish from the dryness of the air in mid-summer in our middle states. And such we have found by experiment is actually the case with trees of many kinds, when planted of large size.

We say of many kinds; for repeated experiment has proved that a few kinds of hardy native trees may be transplanted, even in this climate, with entire success by the Stuart method, or any other that will sufficiently preserve the entireness of the roots.

Fortunately, the two kinds of trees adopted for removal, when of large size, in our climate, are the two most popular and most valuable for ornamental purposes. We mean the ELMS and the MAPLES. Few forest trees have more dignity and grace; none have more beauty of outline than our weeping elms and sugar maples, to say nothing of the merits of other varieties of both these trees. And if the possessor of a new place can adorn it with a dozen or two fine specimens of these, of a size to give immediate shelter and effect to the neighborhood of his house, he can then afford to be patient, and enjoy the more gradual process of coaxing smaller specimens into luxuriant maturity.

The reason why oaks, nut trees, chestnuts, tulip trees, and the like, when transplanted of large size, do not succeed here, where elms and maples do, is that the former unluckily have a few strong, or *tap-roots*, running downwards, while the latter have great masses of fibrous roots, running near the surface of the ground.

Now a tap-rooted tree, even when small, has a much less *amiable* disposition when dug up, and asked to grow again, than a fibrous rooted tree; because, indeed, having fewer small roots, it has only one mouth to supply its hunger, and to gain strength to go on again, where the other has fifty. Hence, though it may, under very favorable circumstances, like the climate of Scotland, overcome all and succeed, yet it is nearly a death struggle to do so in our dry mid-summer air.* It is not worth while to

* We have found that large oaks, when transplanted, frequently live through the first year, but die the second, from their inability to contend against the climate and make new roots.

waste one's time, therefore, in transplanting large oaks, or hickories, in this hemisphere.

And now, having reduced our class of available subjects to elms and maples, let us inquire what is the best method of transplanting them.

The first point regards the selection of the trees themselves. And here Sir HENRY STUART, or his book, would teach many planters a piece of real tree-craft which they are ignorant of; and that is, that there is as much difference, in point of hardiness and power of endurance, between a tree taken out of the woods, where it is sheltered by other trees, and one taken from the open field, where it stands alone, exposed to the fullest influences of wind and storm, light and sunshine, as there is between a languid drawing-room fop and a robust Green Mountain boy. For this good and sufficient reason, always choose a tree that grows alone, in an open site, and in a soil that will allow you to retain a considerable ball of roots entire.*

"How large an elm or maple may we transplant?" Our answer to this question might be, as large as you can afford—but for the great difficulty of managing a very large tree when out of the ground. That it may be done, is now a well established fact; and hence, the only question is as to its expediency.† Trees from 20 to 30 feet in height, we conceive to be, on the whole, the most suitable size.

There are two modes now in considerable use for moving trees of this size; the first is the Stuart mode, to be performed in spring or autumn; the second, the frozen-ball mode, to be performed in winter.

The Stuart mode is the best for trees of the largest size. In this mode, the roots are laid bare with the greatest care; every root, as far as possible, being preserved. The wheels are then brought up to the tree, the axle made fast to the body, (with a stuffing between, to prevent injury to the bark,) and the pole is tied securely to the trunk and branches higher up. A long rope, or ropes, being now fixed to the pole and the branches, the pole serves as a lever, and the top is thus brought down, while the mass of roots is supported upon the axle. After the tree is properly balanced on the carriage, horses are attached, and it is transported to the hole prepared for it.

This mode is one which requires a good deal of practical skill in the management of roots, and in the whole art of transplanting, though great effects may be produced by it in the hands of skilful workmen.*

Transplanting with a frozen ball is a good deal practiced in this country, and is much the cheapest and most perfect mode for trees of moderately large size; that is to say, trees from 20 to 30 feet high, and whose trunks measure from 6 inches to a foot in diameter. Trees of this proportion are indeed the most suitable for the embellishment of new places, since they unite immediate beauty of effect with comparative cheapness in removal, while it requires less mechanical skill to remove them.

The process of removing a tree with a frozen ball is a simple one, especially if performed in the early part of winter, while

* The best *subjects*, when they can be had, (as they frequetly may in the neighborhood of towns,) are trees planted some ten or fifteen years before in some neighbor's grounds, where they require being taken out, (if you can persuade him of it,) because originally planted too thickly.

† One of the most successful instances of this kind of transplanting, in this country, is at the cottage residence of THOS. PERKINS, Esq., at Brookline, near Boston. An *avenue* of considerable extent may be seen there, composed of elms 30 to 40 feet high, beautifully shaped, and having the effect of full grown trees. They were removed more than a fourth of a mile, from the seat of Col. PERKINS, with perfect success, and we believe by the Stuart mode.

* We cannot but express our surprise that some of our exceedingly ingenious, and clever Yankee teamsters, have never taken up, as a business, the art of transplanting large trees. To a person competent to the task, with his machine, his oxen and his trained set of hands, an abundance of occupation would be offered by wealthy improvers of new places, to whom the cost of a dozen elms 40 feet high, at a remunerating price, would be a matter of trifling moment.

there is yet but little frost in the ground. In the first place, the hole should be made ready,* and a pile of suitable soil laid by the side of it and covered with straw, to prevent its being frozen when wanted.

Then a trench is dug all round the tree, in order to leave a ball of earth of from six to eight feet in diameter. The trench should be wide enough to allow the operator gradually to undermine the ball of roots, so that at last the tree just stands, as it were, upon one leg. In this condition let the ball be exposed to a sharp frosty night, that it may freeze quite firmly. The next day you approach the subject with a common low sled, or *stone boat*, drawn by a pair or two of oxen; (or if the tree measures only six inches, a pair of horses will do.) The tree with its ball is now thrown to one side; the sled is then placed under the ball on the opposite side; then the tree is righted, the ball placed upon the middle of the sled, and the whole drawn out of the hole. A teamster of very little practice will now see at a glance how to balance his load upon the sled; and once on level ground, it is no difficult matter to drag the whole for half a mile or more to its final location.

After the tree is placed in the hole previously prepared for it, the good soil must be closely pressed around the ball, and the trunk supported in its place, till after the equinoctial rains, by stakes or braces.†

There is no mode for the removal of trees in which they will suffer so little as this; partly because the roots are maintained more entire than in any other way, and partly because the soil is not even loosened or disturbed about a large portion of the fibres. Hence, though a slight reduction of the top is advisable, even in this case, to balance the loss of some of the long roots, it is not absolutely needful, and in no case is the symmetry of the head destroyed; and the possessor of the newly moved tree has the satisfaction of gazing upon a goodly show of foliage and shade as soon as June comes round again.

Those of our readers who are groaning for the want of trees, will see by these remarks that their case is by no means desperate; that, on the contrary, we think it a very hopeful one; and that, in short, if they can afford to expend from two to ten dollars per tree, and can get at the right kind of subjects in their neighborbood, they may, if they choose, transform their premises from a bleak meadow to a wood as thick as "Vallombrosa's shade," before the spring opens.

And now, one word more to those who, having trees, are impatient for luxuriant growth; who desire to see annual shoots of six feet instead of twenty inches; and who do not so much care what it costs to make a few trees in a favorite site advance rapidly, provided it is possible. What they wish to know is, can the thing be done?

We answer, yes. To make a hardy tree* grow three times as fast in a summer as it usually does, (we speak now, of course, of trees in common soil,) it is only necessary that it should have three times the depth for the roots to grow in, and three times the amount of food for its consumption while growing.

And, first of all, for very rapid and luxuriant growth in our climate, the soil must be deep—deep—deep. Three feet of trench-

* Especially should the soil, in the bottom of the hole, be well trenched and manured.

† We may here add, that besides elms and maples, this mode is equally successful with *evergreens* of all kinds. We have seen white pines and firs, of 20 feet high, moved so perfectly in this manner that they never showed the least mark experiment[illegible] place.

* We say a *hardy* tree, because every arboriculturist knows that to promote extra luxuriance, in a tree not perfectly hardy, increases its tenderness, because the wood will not ripen well, like short jointed growth; but there is no fear of this with elms, oaks, maples, or any perfectly hardy native trees.

ing or subsoiling is imperative; and we have seen astonishing results, where places for trees twelve feet broad and five feet deep have been prepared for them. If any one of our readers will take the trouble to watch an elm tree making its growth next season, he will notice that, if the season is moist and cool, the shoots will continue to lengthen till past mid-summer; but if, on the contrary, the season is a dry one, all growth will be over by the middle of June. Why does the growth cease so early in the season? Simply because the moment the moisture in the soil fails, and the roots feel the effects of the sun, the terminal buds form at the end of each shoot, and then all growth for the season is over. Deepen the soil, so that the roots go on growing in its cool moist depths, and the tops will go on lengthening despite the power of the sun; nay, so long as there is moisture, by the help of it. And hence, the length of time which an ordinary tree will continue to grow, depends mainly on the depth of the soil in which it is planted.

If any skeptic wishes to be convinced of the effects of deep and rich soil upon the luxuriance of a plant, he has only to step into a vinery, like that in Clinton Point, (described in our October number,) and see, with his own eyes, the same sorts of grape, which in common soil, even under glass, usually grow but six or eight feet high in a season, and with stems like pipe-stems, growing twenty or thirty feet in a single season, with stems of the thickness of a man's thumb, and ripening delicious fruit in 14 months after being planted. Now, exactly the same effect may be produced by deepening and enriching the soil, where the elm or any other hardy ornamental tree is to be planted; and we put it thus plainly to some of our readers, who are impatient of the growth of trees, that they may, if they choose, by a little extra pay, have more growth in three years than their neighbors do in ten.

A NOTE ON THE CURCULIO, AND ON COVERING GRAPE BORDERS.

BY H. W. S. CLEVELAND, BURLINGTON, N. J.

A. J. Downing, Esq.—I perceive that Mr. Longworth is shocked at my presumption, in basing an opinion upon a single year's experience. If I asserted more than my experience will sustain, I will plead guilty to his charge; but on looking over my letter (which he has ridiculously misquoted,) I find no assertions made, except that paving is not always a preventive of the curculio, and that the insects are often of a wandering habit; and as I plainly state my reasons for coming to these conclusions, it is in every reader's power to judge for himself of their value.

Mr. L., however, asserts that the safety of the pavement arises from the instinct of the insect, which will not deposit its egg over a pavement, because the young, when they fall to the ground, would be unable to secure winter quarters.

If this is true, how comes it that my whole crop was destroyed when the ground was paved, as I described, in such a manner that it was impossible the insects of the previous year could have come out of the ground under the tree? Did instinct tell them that the pavement would be removed before another year?

Of the utility of paving, in some cases, I have no doubt; as I know of plum trees in

paved yards, surrounded by houses, which bear and ripen abundant crops; but I still venture the opinion that paving is not in all cases effectual.

I will now give you the result of another experiment, which may be of use to some of your readers; but I warn all that it is only the experience of a single year.

I last spring hauled a quantity of fresh tan from a tan-yard, and put a heavy dressing of it on the vine border of my grapery. The remainder, some six or eight wagon loads, was deposited in a heap a few feet from where an old Isabella vine was growing. A few days since, on removing this heap, I found this vine had sent roots up into the heap more than a foot from the ground, which had spread their fibres through it in every direction. Some of my neighbors had cautioned me very strongly against using the tan on my vine border till it was thoroughly rotted; but I never have had so fine grapes in my house as the past season. And since seeing how this heap had become filled with roots, I am strongly inclined to attribute their excellence to its use; and will venture the opinion that fresh tan is a good manure for grape-vines, though I advise those who think differently not to use it. Very truly yours, H. W. S. CLEVELAND.

Oatlands, Burlington, N. J., Nov. 6, 1849.

WINDOW GREEN-HOUSES.

[FROM BECK'S FLORIST, LONDON.]

You ask me the particulars of my "window green-house," in which, as I have been sufficiently successful not only to please myself, but to have imitators because of that success, I have great pleasure in telling you—no, not you, but your readers—how I manage matters. I had last season about 900 blossoms on 35 plants, and as I am not aware that the care of them took up time that ought to have been otherwise employed, and was a pleasure all through the year as well as in the blooming season, I really should be glad to see the system more general. I cannot promise that all shall succeed who may try it; but I think I can show that those who do not may charge themselves with their failure.

Probably most of your readers have occasionally noticed a most flourishing tree, covered with healthy blossoms, in an old broken teapot in some cottage window; and some may have thence inferred the uselessness of care and science in the treatment of plants. I do not draw that conclusion from the fact. For look at that sickly thing in the next window to it. How much better and healthier the flowers look in the one window than the other! And yet the houses are built on the same plan, and stand next to one another; and therefore the inference I should draw is, that there is a right way and a wrong of growing flowers; and, further, that a person who uses the right will succeed under great apparent disadvantages. And as a closer inspection always shows the difference to be in the person and not in the place, and that such persons rarely spend much time or pains upon their pets, and yet everything seems to succeed with them, it is plain that those who will follow their example will make their window plants flourish as well as theirs do. And this is so true, that if a person will not make up his mind to act upon the right system when he knows it, I cannot recommend him to keep plants indoors, many or few, unless for the wholesome discipline of disappointment.

Now I believe, sir, you will agree with me, that the right system for plants, as for children, is the natural system; and that nostrums, and secrets, and tricks, are, for the most part, not only pernicious but silly. As a general rule, and under similar cir-

cumstances, what will grow a good cabbage will grow a good Pelargonium or Fuchsia. And that the apparent departures from this rule are only examples of it, and depend on common-sense reasons, drawn from the nature or the original climate of the species of plant.

And the natural system may be comprised under two heads: 1, not to *let* your plants suffer by neglect; 2, nor to *make* them suffer by interference. If many people let them dwindle or die by forgetting to water them at proper times, or to shelter them from excess of sun or of cold, others, not less numerous, think their flowers can never be thriving unless themselves are doing something to make them thrive. And so they bring them to their end, or to pale, sickly, scraggy things on stilts, that can never repay their owner for the trouble of rearing them.

The application of this system to the culture of the Pelargonium is somewhat hazardous of the charge of presumption in such a person as myself, because I suppose you have already given directions for that in some of the numbers of *The Florist* I have been so unfortunate as not to see; and anything I were to say on the subject that you have already said would be superfluous, and what might differ from your instructions, I am persuaded would be erroneous. Only I would repeat, that any person who will use common sense and common care may succeed in the culture of any of our ordinary fancy flowers.

Of these, by much the most useful for a window, and which I expect will always retain its place in this respect, is the Pelargonium; and, as I have no room to spare, I confine myself to this. You will believe I have no spare room when I tell you that I am a curate, with a family of eight grown-up persons, in latitude 53° 29′ 30″ on the Greenwich meridian, in an agricultural village that has no house in it larger than a cottage, and mine is no way remarkable among its fellows, of which it is far from being the largest. Yet, without any other convenience than a cottage window, I grow, in very creditable condition, about 30 varieties (a plant of each) of the best Pelargoniums: enough to make my room a blaze of beauty during the whole blooming season.

Now, on the supposition that my thirty plants are established in their pots, and hardened afterwards in the open air, and that it is time to bring them in-doors (this year it was on or about old Michaelmas-day I housed them,) I will tell you where I put them, and how I treat them when there.

I have no south or southeast window in the house: the aspect is southwest; but there is a small room in the front, of which, as it is my dressing-room, I can appropriate the whole window to my plants. And I have done it in this way, in order to make the small space hold as many pots, give them as much light, and bring them as close to the glass, as possible. The glass of the window is 3 feet 9 inches broad, and of a proportionate height. This, therefore, is the breadth of the stand I had made in the ordinary way, but as light as possible, and with six shelves, channelled along the middle for the water to run out of the pots. As the plants are of all sizes, and more of them small than large, the four lower shelves are 4, the fifth 5, and the sixth 6 inches broad; the bottom one 3, the rest 4 inches high, which, with 3 inches allowed for standing in its pan, make the entire height 2 feet 2 inches.

The frame stands in a water-tight wooden pan, 3 feet 10 inches long by 2 feet 4 inches broad, and 3 inches deep, with a hole and plug in one corner to let off the water, so that I can water my plants as freely as I like without wetting the room or making a mess. The whole stands on two three-legged tressels, and the waterpot is kept underneath, so that the water shall be always of the same temperature as the room, a point I have found to be of great importance to the well being of the plants.

This stand, painted, cost 15*s*. And as I began collecting gradually, bought but few, and exchanged with friends, I had a very good collection before I had spent £2 upon my hobby. Since then I have been more expensive, as I will not keep any but first-rate varieties, and unhesitatingly condemn a flower that displeases me, whatever its price in the market. Yet I believe I may challenge any other hobby, far less useful or ornamental than this, on the subject of cost. Careful as I am bound to be of my

expenses, I should expect an acquittal from the charge of extravagance even from those who do not partake of the taste for these things. And I am sure that the pleasure and the *profit* have amply repaid my little outlay; for profitable it is. Anything that decorates home, and concentrates a man's amusements and attractions round his own hearth, and unites the rest of his family with him in them, is an avoidance of expense to him, and is worthy of encouragement as a benefit to society. And among these things, gardening, within legitimate bounds, has always deservedly held a high place. And in this I am sure "window gardening" may fairly claim its little modicum of praise, as being least liable to abuse; unless, indeed, the bedroom be made, as I have sometimes seen it, the depository of plants, for then they are really injurious to health.

When my plants are on the stand, I do not find they *require* looking to every day, though even if they did, their wants are so few, and so easily supplied, that it would be but little trouble.

1. Light is their greatest and invariable requisite; and this is the chief difficulty to give them in a sash-window when there is more than one row of them. A short and simple rule will, however, lessen much of the difficulty; for they require light *in proportion to the rapidity of their growth.* Consequently the back rows, as having least light, should be kept driest, in order that they may grow slowest; and when they show a tendency to throw out too long leaf-stalks they should be stinted in water and placed nearer the window. Also, when hey bend forwards, it is a proof they are having too much water in proportion to heir distance from the glass.

2. They want air, and therefore I generally open the window once a day, even in the winter's frost; but I do not think it so necessary as is by many supposed. It seems to be of more service in keeping the temperature of the room equable than for the admission of fresh air. When the wind is in the east it almost always hurts them; and a thorough draught, of which many persons are far too careless, is especially to be eschewed. But I have seen a plant in the window of a farmhouse, and of a very ordinary kind (Lord Mayor,) which, for growth, number and perfection of blooms, and striking general appearance, would have deservedly attracted attention on a field-day at Chiswick. Yet this plant had never had a breath of fresh air for six months.

3. My impression about water is, that professional florists are too much afraid of it. If a plant is close to the window, the rapid growth caused by superabundant water is not always a loss, nor does it always deteriorate the soil in the pot so much as is supposed. In cottage windows plants often thrive, grow stout, bloom profusely, and with blooms in truest shape and colour, though standing, and having stood, in saucers of water for weeks or months. My cuttings, if well rooted, I always set in pans of water, even in the autumn, till they are as large as I wish them to be before the winter, taking care to place them in the window itself while they are so treated. Even the green moss on the mould and round the pot, unsightly as it is, and betokening slovenliness (and therefore I never suffer it myself,) I fear is slandered when said to kill the plant. At least, I have seen a plant perform very well for years, though covered with it. Don't be talked out of your saucer of water, Mrs. Wilkins, when they tell you you will drown your Geranium, and that the air cannot circulate about the roots if you keep it so. *There is air in the water;* and you do not wash away the goodness from the mould half so much as by watering it from the top, and letting the superfluous water run off and carry the strength of the soil with it. Only remember, you are "tendering" your plant, and that it is more likely to be touched with the frost or to grow "leggy." I believe I have gained by giving my plants more water than my neighbors do. One winter (it was a very mild one, and the plants were growing slowly all through it) I watered them freely with a rose over the leaves, and never had them stronger or healthier. From seeing its evil effects elsewhere, I do not think I shall do so again, but I am glad, for the experiment's sake, I did it then, though I did it merely in ignorance that it is dangerous, and not for the purpose of experiment.

4. Respecting artificial heat, I have never yet needed a fire for them. It is true, the room is between two others, and so has no outside wall but the window front. If the frost is only moderate, I draw a green baize curtain between them and the window; if severe, I draw two; if a "*Murphy's*" frost occurs, I shall *burn a lamp*. Even one small lamp in a small room makes a considerable difference in the temperature.

5. If any need larger pots before they flower, I am careful not to break the ball of earth, nor do I ever disturb the roots except at the September repotting, when I give them plenty of drainage and a compost of black heath-sand, rotted turf, and *completely decayed* stable manure, in equal parts.

In all this there is very little expenditure of time, trouble, or money; and the elegance and harmlessness of the pleasure obtained is an ample recompense for what is incurred. Besides, I have the satisfaction of replacing the rubbish often nurtured in the cottage windows of my neighborhood with similar objects of a kind more worthy of the attention bestowed upon them. And I confess I am one who take as much delight in seeing a fine flower in a neighbor's window as in my own.

* * * In my former letter on flowers in windows, I omitted one or two things which may be useful knowledge to some of your readers. In such a situation they are peculiarly liable, especially in dry and hot seasons, to be infested with green fly (*Aphis.*) And there are few things about which I am more frequently asked than the best method of keeping clear of them. Probably no care will prevent these insects appearing at times, though whatever tends to keep the plants healthy and strong, tends at the same time to prevent the ravages of fly; for they are most troublesome, in general, upon a weak plant, or upon one drawn up by close packing, want of light, or superabundant water, and of which the leaves are long stemmed, and of a pale sickly green,—a condition of things very common with us window gardeners, and very necessary to be quickly attended to, as the fly is sure to attack such, and increase the evil. Cuttings that are long in rooting themselves are sometimes prevented by them from striking at all; the whole of the sap manufactured by the feeble powers of the nascent plant being extracted. Now, there are many persons who possess the means of employing the usual remedy—tobacco smoke, but are not aware of its efficacy, or how to apply it. Such as have a cucumber frame, or any other *box* large and deep enough to place over their whole collection, should, when fly appears, except it be in frost, set them out of doors under such a covering; and on a brick therein lay a red hot cinder or two, and on them a quarter of an ounce of tobacco, not too close to the plants for the hot smoke to burn them, and cover all up close for a quarter of an hour or twenty minutes. On removing the covering, every fly will be found to have perished.

There is, however, another very effectual way, and which, in a collection not exceeding a score of plants, will not occupy more time or labor than the foregoing. Take up each plant separately, and either with the breath, or, if you are afraid of your lungs, with a bellows, *blow* them off. It will require a brisk puff, for they cling most tenaciously; only let no one who suffers them to remain expect a crop of flowers.

But now respecting the remedy for these drawn-up and pallid weakly plants. My friend Mrs. Wilkins, when she sees any symptoms of this, puts hers out of doors for a time; and her neighbors, seeing how well this answers its purpose, follow her example, and theirs all die, and they wonder how it is they are so unlucky. The fact is, they think the mere doing it will ensure success. While one forgets them, and leaves them out for the night, and a slight morning frost ends the matter; another places them out when there is wind, even an east wind; a third exposes them to the sun; all these errors must be avoided, and, when they are, the plan will generally succeed. I have now (Dec. 13) a large plant in training for a Christmas bloom, which a fortnight ago showed nothing green about the leaves except the ribs; but now, by exposure to the free open air out of doors, presents the appearance it usually would in April.

But there is another way which, until tried, would be supposed to produce the

very opposite effect, namely, to plunge them in a hot-bed for a few days. When a plant, spindling and weakening itself, is subjected to bottom-heat, the effect is astonishing. The growth upwards is immediately *checked*. The branches swell, instead of lengthening themselves, the leaves recover a deep and healthy green; and not till these effects are produced does the upward growth recommence, when they should be removed again.

One of the most common mistakes by which pale leaves are produced is by stimulating applications, by liquid manure, or placing a coating of manure on the top of the pot. The effect of this is not dissimilar to that of givtng gin to a child. The minute and tender rootlets cannot bear the strong excitement. They perish, and the plant soon after follows their example, if the pernicious system be persevered in. Eschew all impatient desire of stimulants. Give entirely fresh mould once a year, and let that, if possible, be maiden, and, if you please, pot off into smaller pots for the winter, as I do, to save room; only remembering to re-pot into larger ones in the spring, *without breaking the ball of earth*. Be sure also to remember the drainage, to prevent the soil becoming sodden and sour—not a mere piece of oyster-shell over the hole, but a handful of broken pieces of pot put in carefully.

One word more about training. One who recommends such a thing must expect to hear a good deal of well-meant nonsense about suffering the plant to grow as nature meant it to grow. Nature never meant anything. But the Author of Nature has imposed training and discipline as a *duty;* nor is any person or thing ever brought to the highest perfection it is capable of without restraint, and pruning, and direction, from a fostering hand. Not an apple tree or a currant bush will long repay the use of the land they grow on, if their owner forgets the duty incumbent on him in virtue of his descent from Adam, on whom the sentence was pronounced. Thorns, and thistles, and barrenness will soon be found in all things to be the point to which, if left to themselves and *to their nature*, they will tend. Cultivation is necessary, in order to exhibit the good of which every sublunary nature is capable. Never speak slightingly of training, even in a Geranium. It may teach you a lesson respecting yourself, and the persons committed to your care by the providence of God; and it will amply repay you for your trouble in its floral results. Persons who have never seen a trained plant are incredulous of its effects. The gardener of a country gentleman in this neighborhood who had three conservatories under his care, would not believe, on my testimony, that a single stem could be made to support from eight to sixteen or twenty flowering branches, arising from nearly the same height above the pot; but endeavored to persuade me that it must be done by cheating, and putting many plants into one pot. The method, however, is very easily practiced, and is well worth any person's employing on at least a few of his most striking and useful sorts. The principle is this, that no more branches can thrive than can be supplied with a free circulation of air, so as not to interfere with each other. And the mode by which this is insured is equally useful in keeping the origin of the branches low, so as to make a compact bushy plant. And it is so simple, that you may do it, Mrs. Wilkins, as well as Mr. Dobson himself. If you have a nice young healthy and stocky plant to operate upon, it is better, but not absolutely necessary. If you have, pinch off its head; and when it breaks out at the sides, either *peg* down the side-branches as nearly straight out as you can without tearing the joint, or *tie* them down, which must be done thus: tie a string tightly round the pot, just under the rim; and under this pass a loop of thick worsted over the end of each branch, to keep it down in the position you wish it to grow in.

When the branches reach out as far as you wish them, a little beyond the rim of the pot you mean the plant to flower in, pinch off their ends, and, after they have pushed out their eyes into branches, you may remove the strings, and you have thenceforward *a trained plant*, to last you many years, and each year better than the last; which only needs cutting down in summer after flowering, and ordinary care afterwards, to be a perpetual beauty in the

Fig. 94.

blooming season. I have now an old Sir Robert Peel with thirteen such branches springing from its rough wooden arms, and plenty of elbow-room for each; which, at eight blossoms to each, will give a total of above a hundred blossoms; and I expect nearly as many from my Aurora, which some say is the handsomest Geranium grown. Moreover, if you do not care about the cuttings, you may, by setting it out in the open air after it has flowered, and protecting it from wind and sun for the first day or two, and bringing it in again when sufficiently hardened, have it flower again, and often as well as at first.

And now, in conclusion, let me recommend every cottager's wife to have a plant or two in her window, but *not* in the bedroom. The very trouble they give, and it is but a little, is beneficial, for it exercises *attention*. The care they require tends to produce neatness in other things; and the pleasure with which they repay the care that is given them is a refined, a domestic, and an inexpensive pleasure, and is a means of elevating the tastes and of rendering home attractive.

A NOTE ON VINE BORDERS.

BY J. L. COMSTOCK, HARTFORD, CT.

Dear Sir—The doctrine advanced by Dr. Stevens of New-York, in your number for December, 1849, is so entirely new in vegetable physiology, that I hope he will excuse me for inquiring how far its truth has been proved by experiment. The principle in question is involved in the following quotation: "Trees grow perfectly well in cities, with their roots under stone flagging, impermeable to every influence from the sun and air, but not of heat. What use do the roots make of air when they get it? Air, at the roots of plants, is as much out of place as in the stomach and bowels of animals. What little air is about the roots of plants, and in the alimentary canal of animals, is only useful as an agent of decomposition."

Now Dr. Stevens is the first and only authority I have ever consulted, who denies that the roots of growing vegetables, of whatever kind, do not require the influence of atmospheric air. Ray and Bayle, long before the discovery of oxygen as an element, ascertained that the seeds of plants would not germinate without the presence of *heat*, *moisture* and *air*. And Scheele, soon after that discovery, found that the vital principle of seeds remained dormant unless they were exposed to the united influence of heat, moisture and *oxygen*. More recent experiments have confirmed this truth; nor will seeds, grown in nitrogen, carbonic acid, or in a vacuum, unless vital air, however small in quantity, be also present.

It is not requisite to show here what chemical changes are evolved during the process of germination, or "what use the roots make of air when they get it." That

seeds require air for their growth, it is believed Dr. STEVENS will not deny; nor should I have thought it necessary to state the above proofs, except for the analogy which germination bears to the growth of plants. The question is therefore merely, whether the healthy vegetation of plants require the presence of atmospheric air at their roots.

It is well known to Dr. S. that, under the common pressure of the atmosphere, no air-pump has been so perfect as to produce a complete vacuum; and also, that such is the permeating subtlety of this elastic fluid, that the cells of all porous substances which have been examined are found to contain more or less air.

The depth to which air penetrates the ground, it is true, must depend on the nature of the soil. Adhesive clay, pressed down and kept moist, would admit but a small quantity when compared with the more porous sand or gravel; but of whatever materials the soil may be composed, there is no doubt that the air finds its way through it, to a depth equal to that of the roots of any healthy vegetable of whatever kind.

The following example will show how small is the obstruction of common garden soil to the permeation of the atmosphere: A well is situated four rods from the pump; the water being drawn by means of a tube three feet under ground, and descending twenty-seven feet into the well. On the top of the brick surrounding the well is laid a flagging stone, entire, and say four inches thick, and four feet square; and on this a quantity of earth sufficient to p.oduce grass, so that no signs of the well are apparent. And yet so free is the access of the atmosphere to the water, that the fluid is delivered by a common iron pump, (which demands atmospheric pressure,) situated four rods from its source, and thirty feet above its surface.

This example is stated to show that, although "trees grow perfectly well in cities, with their roots under stone flagging," yet this fact by no means proves that the air is not always in contact with their roots. On the contrary, it is well known that if seeds are buried in the earth, to the depth of several feet below the surface, so that they are entirely beyond the reach of the oxygen of the atmosphere, they will never germinate, but may still retain their vitality, even for centuries; hence it is common for alluvial soils, from deep excavations, to produce plants, when exposed to the vivifying influence of the atmosphere.

We know, also, that if the roots of growing trees be covered with several feet of soil, that they certainly perish in a year or two. That this does not arise from the want of heat, appears, from the fact that clay, of an equal depth, is more destructive than sand,—the latter being most permeable to the air; and that the destruction is not caused by the pressure, will appear when it is known that the same, or even double the weight of broken stones, would not in the least affect either the growth or the bearing of the tree.

We might bring many other facts, to show the absolute necessity of common air to the roots of plants for healthy vegetation. But not to protract this letter, I will only add, that I remain the humble servant of both Dr. STEVENS and the Editor.

J. L. COMSTOCK.

Hartford, December 10, 1849.

A NOTE ON VINE BORDERS.

BY R. L. COLT, PATERSON, N. J.

DEAR SIR—I have read with great attention Dr. STEVENS' communication in your December number on vine borders, and I agree with you, that with our warm and penetrating sun, the borders recommended by Mr. HOARE, for England, will not answer for our country; and, therefore, I do not think the shallow borders Dr. STEVENS recommends will answer with us.

I tried, two years ago, a small house on HOARE's plan, 20 feet long, 12 feet wide, with 10 feet back wall, covered with glass, and heated with a flue; it was dug out, as a pit, 3 feet deep, enclosed with a dry stone wall, and filled with the materials, as ordered by Mr. HOARE. I then planted my vines inside. This is, in truth, Dr. STEVENS' pot system. This did well, but not so well as we expected; not so well as vines, of the same kinds, planted in outside borders. They were watered from time to time with pond water, and occasionally with whale oil soap-suds, with an addition of potashes—the best manure for grapes. This fall my gardener not being satisfied with the growth of the vines, asked permission to open an outside border. We did so, in a trench two feet deep by five feet wide, and found the roots of these inside vines had extended through the crevices of the stone wall, beyond the five feet,—showing plainly, though but of two year's growth, that HOARE's compost was not all the vines wanted.

We are now making an outside border to this house, five feet wide, sunk two feet below the natural surface of the ground—such as does not require a drain. We fill in one foot with oyster shells, old broken bricks, old mortar, &c.; then a slight covering with broken charcoal; then one foot of a mixture of old leather, old woolen rags, some lime, some wood ashes, some broken bones, some slaughterhouse manure,—all well mixed, and covered with a half inch of plaster of paris and coal dust; then six inches of a rich compost of bone dust, (the bones dissolved with sulphuric acid,) old marsh mud, night soil, and plaster of paris, well mixed; then a foot of well decomposed turf from an old pasture. In this last we plant our vines, or allow those within the house to extend outwards, through openings we made in the walls of the present house. Two years hence, we will extend the border five feet wider, and some depth of four feet, by putting dead horses, bones, leather, &c. &c., with a due proportion of lime, plaster and wood ashes—the last not least. In this way, from time to time, we widen our border; for the grape is a gross feeder.

I wish you and Dr. STEVENS would come and inspect my vineries next summer. I feel confident you would be pleased with the results.

I have no doubt that the doctor's plan for giving air by air-ducts, through the borders, is a good one, and thank him for the suggestion, which I will adopt in the borders I am now making. R. L. COLT.

Paterson, N. J., December 10, 1849.

P. S. Past all question, the best grapes I raised this year were *Victoria Black Hamburghs* and *Fontainbleau Chasselas*, grown under glass, without fire; the vines planted in the house, with access to an outside border ten feet wide, three feet deep—the inside border same depth. The grapes, for colour, size and flavor, decidedly superior to those cultivated with fire. I am now making a cold vinery, of 230 feet by 14.

CRITIQUE ON NOVEMBER HORTICULTURIST.

BY JEFFREYS, NEW-YORK.

Cottage Villa of Mr. Rotch—Frontispiece.—Here is something that I like—A sensible house, and in very good taste; embodying in the main, the essentials of good house arrangement, as far as it goes, and adapted to the purposes for which it was intended—an unpretending, quiet cottage of the *first* class. Still, it is not complete, and may be somewhat altered and extended with advantage; and with your leave, Mr. EDITOR, I'll pass a word or two upon it. In point of internal arrangement, particularly, if not in outside appearance, for a one and a half story house, its hipped roof is objectionable, in cutting off one third of the chamber room; a serious drawback to the convenience and pleasantness of these upper apartments, besides giving to the elevation of the house a *squat* appearance. A bold gable on each side would add to it both light and character; while the deep frieze jetting over the walls would give shade and coolness in summer to the chambers. The roof of the front porch is also too high, running its point far above the pinnacle of the house itself, this making it the superior instead of the inferior appendage, the latter its proper character.* The veranda, light and tasteful as it is, should extend no further than the walls of the house, unless it return down the sides, detracting as it now does from its completeness on a side view, and presenting a defective appearance in front. The dormer windows also, in the roof, afford imperfect light to the chambers, besides defacing their proper figure, and subjecting the roof to leakages and expensive repairs. The chimneys are graceful in their structure, and add to the agreeable expression of the whole. The skylight—as it appears in the view—at the apex of the roof, is appropriate; but the bailustrade below it, is entirely useless, and on, or off, is a matter of fancy only.

Internally, the dwelling is incomplete, for I take it there is no want of ground on which the building stands. It is too cramped. An ample family bed-room is wanting on the main floor. People grow old—sometimes—and a sleeping room adjoining a parlour or sitting room, is, for really *comfortable* housekeeping, indispensable. What is now the kitchen, or the library, could be converted into a sleeping room; the other room of these two not so occupied, should be changed into the dining room, the library take the place of the present dining room, and an ample kitchen, with large, shelvy closets, drawers, and cupboards, and a scullery, and a man-servant's bed-room and a bathing-room on the same floor, should be added by way of wing, not omitting a flight of back stairs to the rear chambers, a wash-room attached to that; a wood-room beyond, if a part of the cellar be not appropriated to such purpose, and still further, either in line, or by an angle adjoining or detached, should extend the other outhouses belonging to a complete northern country dwelling, and which always gives to it that air of repose and comfort to the eye, as well as practical convenience in living, indispensable to a well ordered house arrangement. Such additions would exceedingly improve this neat and tasty design of a "cottage villa."

It is passing strange that people are so prone to build under-kitchens to *country*

* On looking at this design by Mr. DAVIS, we find our correspondent has mistaken the plan. This centre portion, which he calls the porch, runs through or across the whole house, and the architect is correct in making it the highest and boldest part of the composition. ED.

houses, as many are in the habit of doing. In cities, where land is dear, and nothing to see out of the house but brick walls, I can easily understand why they who dwell there are content to spend half their indoor lives, under ground; but in the country, where fine air and sun-light can always be had for the asking, I can divine no good reason for going below, other than that "the architect so plans it."*

Very many of the otherwise prettiest models that I have seen, for a country house, are utterly spoiled for this defect; and I am only astonished that any one at all acquainted with the philosophy of rural life, will for a moment tolerate it when constructing his own dwelling.

One probable cause why under kitchens are so frequently adopted in the country, is the attempt to gain two or three different *fronts* to the house, thus yielding the great desiderata of *convenience* and *home* expression—the two chief objects of a country house at all—to a fanciful and false taste for *appearence*, totally forgetting that a dwelling should look *like* a dwelling, and like nothing else. We should have one *chief* entrance front, and but one. If, by reason of more convenient every day approach or access, or a favorite landscape view, a side, or even an opposite front be desirable, such front should be of less pretension than the main one, and by its subdued expression lead the eye naturally on to the more retired and continually occupied apartments, gradually descending in architectural effort and expense as it approaches the more humble, yet all important appendages which every well appointed dwelling requires. In short, a house, outside, ought to look as though it had a nursery and a kitchen, a back door and a woodhouse, as well as a hall, a parlor, and a library; and the aiming at anything different from such effect, destroys the idea of a really comfortable mansion altogether, and is an absolute perversion of good taste in its construction.

A well spread, amply shadowed, homelike country house, is a grateful object, both to look at, and live in. And its deep porch or veranda without, and its ample hall within, leading on to quite as ample apartments, with arm chairs, and easy chairs, and lounges, where one can throw himself at full length, and at perfect ease, and kick his cares and vexations out of doors, without fear of soiling his carpets, or chafing the varnish off the mahogany or the rosewoods, is still better; and any sort of finish or furniture that forbids the entire recreation and enjoyment of one's self, within or about it, is so much *surplussage*, as the lawyers would say, and should be "struck out as irrelevant."

In your leader of the September Horticulturist, you gave most conclusive reasons why country houses and country furniture, should be unlike city houses and their furniture; and as one generally and strongly alleged reason for country life, is the quietude and leisure it confers, why not at once make the most of its advantages, and indulge in all the *abandonment* which it offers? A *true* country house should also have *some* appearance of rusticity—not

* We think we can give our correspondent some light on this subject. Mr. A. for example, calls upon an architect and wishes a very complete cottage, with kitchen and all conveniences on the first floor. The general features of the plan are discussed and sketches are prepared. It is then found that two parlors and a library must be had on the first floor, and a considerable effect must be produced. Still the house must cost but a very moderate sum, which it must on no account exceed. Here is a dilemma, to which there are clearly but two horns—either the kitchen, &c. must be put in the basement, (where it will be remembered the cost is not more than half of the same accommodation in a separate wing on the first floor,) or a library or drawing room must be given up. The proprietor decides that he cannot surrender his finest apartment, and so the kitchen goes below stairs. It is the impossibility of obtaining with a number of handsome apartments and the utmost convenience of kitchen arrangements, for a small sum, which puts the kitchen of so many cottages *in the cellar*, and not the want of knowledge in the architect. Our correspondent is quite right as to the advantage of having the kitchen arrangements complete on the first floor. Ed.

vulgarity—but a keeping with all which surround it. Not castellated, nor magnificent; neither ostentatious nor pretending, but plain, dignified, quiet, and unobtrusive; yet of ample dimensions, and exceeding convenience. Then, in park or lawn, on hill or plain, flanked with mossy foliage, and well kept grounds, it becomes a perfect picture in a finished landscape. [Most excellent and sensible. Ed.]

The ability to plan a proper country house is a quality of rare endowments, and can be acquired only after much thought, and a very considerable experience; and yet there is hardly a haberdasher, or gingerbread baker of the city, who has made his ten or twenty thousand dollars by a lucky run in trade, but what thinks he is abundantly competent to plan the "nicest kind" of a villa, on a smart scale; while if he be a successful mountebank, a prodigy exhibitor, or a play-actor, nothing short of a Chinese pagoda, a Tudor castle, or a Turkish palace can slake his appetite for display, and when completed, remain his own perhaps for hardly a longer term than he has spent in its anticipations and building. Very well, let those gentlemen have their way. The money they cost is no doubt their own,—for the time being—and living in a free country, they have a right to spend it; and so long as the example they thus set, is not pernicious, which, by the way, it is very apt to be, it is nobody's business. But in this villa building age, it *is* of some amount, that those who intend retiring into sensible and practical country life, build in such a manner as not to make their residences a perpetual source of regret and annoyance to themselves thereafter.

But enough of this for one chapter. I shall probably soon meet with a text for another chapter.

Your Leader.—All right and practical. You've got hold of the real handle in Guano culture. Let the cultivator use it thus, and he will have little to complain of, but everything to commend in its application.

Transplanting on the unbroken sod, &c.—"Why under the sun" don't prairie folk both understand, and do like Mr. Hammond, of Shandy Hall? I like the name, too,—Shandy Hall! It reminds me of dear old Tristam, and Uncle Toby—the luscious widow Wadham—oh, that eye of hers, and that fair cheek, and delicate arm! How could the kind old fellow resist them? But I am straying. I have often thought, when riding over our magnificent western prairies, with their finely wooded islands in the distance, and the beautiful swelling eminences, so temptingly offered to the settler, how rich and luxurious they might be rendered by the display of a little taste in their cultivation and improvement, as contrasted with the pig-stye appearance they so often present in the dwellings and farms of those who occupy them. Here, now, is a plain, practical account of what is done by a man of judgment and skill, with but a moderate outlay, and in a brief period of time. Would that this example could be studied and imitated by every prairie dweller; what a beautiful country would those prairies soon become! Day after day have I ridden over them, delighted with their wild beauty, and sad only when I approached the wretched enclosures and the mean houses which occupy them, destitute of even the most trifling shrub or tree to shadow their nakedness. But even the magnificent oaks, elms, or walnuts which perchance had grown through centuries of luxuriance on the ridge where the settler had squatted himself, remorsely girdled because it shaded a portion of his corn

patch! and standing a scathed and bleaching trunk, with outstretched arms, invoking a malediction on the brutality which thus worked their destruction.

It is refreshing amidst such barbarity to find one who, like Mr. HAMMOND, has the good taste not only to preserve what is already grown, but thus vigorously to plant anew, and give grace and beauty to a region so much requiring it.

Invisible Wire Fences.—Yes, and visible ones too, I trust, will soon begin to appear in this rail-fence and stone-wall distracted country of ours. Why it is that in the grounds of our wealthy country residents, they have not long ago been adopted, is passing strange. In all the long catalogue of farm, park, lawn and garden enclosures, there is nothing equal to it. But before I begin on this subject, a word or two about fences in general. We have at least three times the fencing in this country that is necessary; and pretty much all owing to our beautiful system of "universal suffrage"—not of the people, Mr. EDITOR, but of the quadrupeds, pigs, cattle, sheep, and horses; to say nothing of those charming every-day nuisances called geese, which "nobody" owns when in mischief, but which every body who prefers to use the land of other people instead of his own, turns into the highway. And we "patriotic and independent Americans," haven't independence and self-interest enough to compel those who keep to take care of them. This evil, however, will in time correct itself. We cannot much longer bear the expense of this superfluous fencing. In some sections of our country it is already heavily felt, and better substitutes than rail, board or stone fences are sought. That wire is to become this substitute I have little doubt. *In hedges I have no sort of confidence*, not that they may not be cultivated, although our climate is generally too dry for them, but with the characteristic impatience of Americans to wait for their growth, and the continual changes that are taking place in the ownership and division of real estate, half the hedges, should they be planted, will be rooted up outright, or ruined for want of attention before grown into use; and notwithstanding all the discussions in your paper and others on the subject, I have little confidence in their practical adoption in the United States. But in wire fences and their fitness for all purposes of land division and enclosures, I have entire confidence. Their economy and efficiency are practically demonstrated by Mr. SARGENT, in a way that every one can understand, and he is entitled to the thanks of your readers, as he has *mine* in particular. It is a fertile subject to discuss, and as he is so lately returned from abroad where they are much used, I trust he will pursue it to our further edification.

The substitution of wire fences for those now in use, will give to every farm, park, or lawn where they are introduced, a higher value. The improvement will be incalculable. Instead of rickety, zig-zag rail and board fences, and dilapidated stone walls with their interminable attendants of brush, briars and vermin, they will afford clean cultivation, and save a great amount of labor and waste now suffered by every one who has them to support.

The Madison Plum.—Quite right, DOCTOR. No one can better discover a good plum than yourself, or dress out a finer story about it when discovered. I trust this plum *is* an acquisition among our late varieties, and when I next go up to Albany in the plum season, I shall take it an especial favor to be gratified with a sight of it. I have great confidence in your judgment on such matters.

Random Notes, by Sylvanus.—Valuable thoughts, and most timely in appearance. There can be no doubt of the benefit of mulching *young* trees in particular, and old ones it certainly cannot hurt. The propositions on the pear blight, the bursting of cherry tree bark, and grape mildew, are worthy of consideration. I should like to see the subjects thoroughly discussed in your paper.

The Diana Grape.—An invaluable acquisition to our northern fruits; more especially north of the Highlands. The Catawba, hitherto our highest flavoured American grape, rarely ripens above that latitude, and the Isabella is uncertain. A grape, therefore, that is *sure* for such localities, is a disideratum in our pomology. Let this fruit be disseminated by all possible means. It will be a positive benefaction to the country.

The Congress of Fruit Growers.—Well, gentlemen, you have got together at last; and on very agreeable and satisfactory terms, as I see by the account of your proceedings. Now, you have strength—unequivocal and positive—and your name, too, is a good one. Yours is a great subject—one in which there is a deal to be done, and an annual volume, like that of the N. Y. State Agricultural Society, should be the *literary* fruit of its proceedings. You have the broadest and the finest field in the world for operation; and if, with all the intelligence and research now brought to bear on the subject, you do not expect something which the whole world has not effected before—I mean in diffusing intelligence in fruit excellence, and in fruit culture—I shall think you wanting in both tact and perseverance.

Your lisit of fruits recommended for *general* cultivation is both large and good. The only fear is that it will increase too rapidly through the partiality of those who have their especial favorites, and the knife will have to be unsparingly applied to prevent them running too rampant. Right glad am I to see so numerous a list of rejected varieties. But its not half enough yet. It may be doubled, and trebled, and still the work is not perfect. But you have time enough for action, and no doubt you will improve it.

The move to Cincinnati for next year is a good one. Nothing can more naturalize you than thus holding your sittings in different and widely distant states. But I must pospone further remark till I see the official account of your proceedings, which I observe is soon to be published, and which I hope your efficient secretaries will be kind enough to send me.

Remarks on Diseases, &c., of Fruit Trees.—A very philosophical paper, and worthy the attention of every pomologist. Will not Mr. Ehlers continue the subject? He can do the public no better service in that line than to extend his "remarks."

New Seedling Fruits.—I am happy to see that both Dr. Wendell and yourself so well agree on this subject. It will require some moral courage to keep this thing straight, and I wish that the Pomological Congress had appointed some standing committee to whom, in their several seasons, these new seedlings, as they are brought out, could be sent for examination, so that a fair report could be made concerning them. Some such plan must be adopted, or we shall soon have confusion more confounded, as before.

Destruction of the Curculio.—Three papers, and part of another, among your "Domestic Notices" on this subject, the first by Mr. Saunders, full of doubts and suggestions; the next by our Syracuse friend, J. C. H., being positive, but not so

conclusive as positive; and the last from our veteran Cincinnati pomologist, Mr. LONGWORTH, flatly recording his *experience* against the *opinions* of J. C. H. And now, how doctors disagree. I really wish that Mr. ALLEN, whose paper on Mr. SPALDING's treatment of his plums, appears to have waked up this discussion, would give you further information on the subject, or get Mr. SPALDING to do it himself. Mr. LONGWORTH's experience agrees exactly with Mr. SPALDING's, thus far, and Mr. L.'s plum trees of twenty-two years of constant bearing, is certainly a reliable *fact* not easily controverted.

If paring *will* stop the ravages of the curculio, three dollars expense for that purpose is a cheap remedy, as it will last the entire life of the tree, and the whole expense be paid two or three times over every year in the fruit.

Now, my good J. C. H., as you are so positive as to what will *not* prevent the curculio, will you be kind enough to tell us what *will* do it, or can you give us any light on the subject whatever. I will give one hundred dollars for an *effectual*, a *permanent* and *practicable* preventive for my own trees, and I should clear the expense in one season, and save double the sum besides. This ascertained, the plum is as certain a crop in the northern states as any fruit whatever; but not ascertained, it is a chance matter altogether with nine-tenths of the entire country.

English Parks.—Odds, Bodikins! But the "Gardener to Professor SILLMAN" is in a stew! "Haven't I been there, and haven't I seen?" said the illustrious BEN PUMP to "Squire DICKERS." And why should not Mr. LEUCHARS know all about it also? for he not only has been, but was born in England. But softly. If the gentleman will just take up the "Mark Lane Express," the leading agricultural paper in England, and read its almost weekly articles and discussions upon "Game preservers," game laws, poachers, Botany Bay, together with agricultural distress, laborers' allotments, "parks of the nobility," poor-rates, and high-rents, and all the other grievances which power and entail heap on the powerless and unentailed, and will then tell us by any established fact, the comparative annual revenue per acre of any one nobleman's park, in proof of his assertion of their superior productiveness over cultivated land, he shall have ample credit for it. Mean time wait, my good friend; old England, I fancy, will not be agonized at my remarks.

JEFFREYS.

Correction.—In my notice printed in September Horticulturist, in the article "*Horticultural suggestions, &c.*, in twelfth line from the top, for "soils," read evils; and in *Descriptive notes of new Strawberies*, first line on top, for "distinguished," read disinterested. J.

December, 1849.

THE NORTHERN SWEET APPLE.

BY JONATHAN BATTEY, KEESEVILLE, N. Y.

AMONG the new native apples presented to the notice of the pomological meetings in New-York, for two years past, there are few that have been rated so highly as a fine golden yellow sweet apple, from the valley of Lake Champlain, presented by Mr. BATTEY, of Keeseville, N. Y. Mr. B. has also, at different times, furnished us with specimens of this variety, which, as a *sweet* apple, is both very handsome and very good. As the committee on seedling fruits, at the last Pom. Congress, recommended this variety as worthy of cultivation; and as we conceive it will prove especially valuable in northern latitudes, we publish the accompanying outline and description, which we made from the fruit, and also some remarks on the history of the variety, by Mr. BATTEY.

It should also be remarked, here, that this variety has been hitherto known in northern New-York, and the adjoining portions of Vermont, as the Golden Sweet, and the Northern Golden Sweet. It was recommended, however, by the seedling fruit committee of the late Congress, that, in accordance with the rules of pomology, the fruit be hereafter known as the *Northern Sweet;* both for the sake of brevity, and in order that it might not in any way be confounded with the Golden Sweet of New-England,—a well known and very distinct variety.

NORTHERN SWEET.

Synonym—Northern Golden Sweet.

A handsome and highly saccharine apple, cultivated in northern New-York and Vermont. "Tree vigorous, hardy and productive, and bears while very young."

Fruit rather large; form roundish, and in some specimens distinctly furrowed, or ribbed, both at the eye and stalk. Skin smooth, and even slightly oily to the touch; at maturity, deep golden yellow, and, in fine specimens, with a blush on the sunny side. Stalk an inch long, moderately stout, generally enlarged or swollen at the base, and inserted in a shallow (filled-up) cavity. Calyx woody, closed, set in a regular plaited basin of moderate depth. Flesh

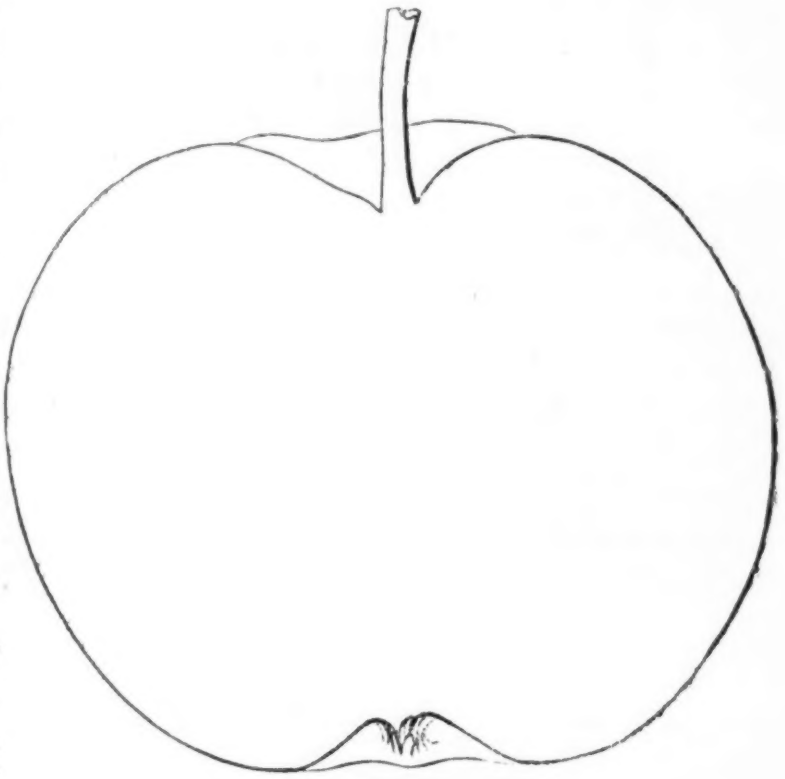

Fig. 95.—*Northern Sweet.*

white, fine grained, juicy. Flavor very rich and sweet.

Mr. BATTEY gives us the following account of this apple:—This fine variety, though it has been cultivated for some 50 years in the vicinity of the place where it originated, appears to have been very little disseminated. The only bearing trees known to the writer, are to be found in his immediate neighborhood, and in some parts of Chittenden and Addison counties, in the state of Vermont. Why a fruit of such merit should so long have remained in comparative obscurity, is to be accounted for only from the fact, that for many years the true Golden or Orange Sweet, of the catalogues, was imagined by those acquainted with this fruit, to be identical with it.

The Northern Golden Sweet is unquestionably one of the best autumn *sweet* apples known. Having been perfectly familiar with it for the last 20 years, I have no hesitation in saying that I consider it decidedly *best*, among the best of its class and season. Some other sorts may possess certain peculiar advantages which this class does not,—as of early maturity, or late keeping; but in point of quality—of intrinsic excellence—it is, in my estimation, unrivalled by any other sweet apple of any season,* with which I have had the good fortune to become acquained. The deep golden colour of its skin, and its brilliant red cheek, give it a charm for the eye of the amateur which is seldom surpassed. As evidence of its good qualities, it may be stated that the fruit, though coming at a time when several other good sorts are in eating, sells readily here at one dollar a bushel, when the ordinary price of other good varieties is but 50 cents.

In the nursery, the tree grows with about medium vigor; but the branches are rather weak, and much inclined to droop. Older subjects are no less remarkable for the pendant habit of the terminal shoots, which are closely filled with spurs or bearing wood. The tree comes into bearing very young, and is one of the most regular and abundant bearers that I know. Its season of maturity is from the middle of the 9th month to the 1st of the 11th month.

The history of this variety is briefly this. Some 50 or 60 years ago, NATHAN LOCKWOOD, of Westchester county, N. Y., on his removal to St. George, Chittenden county, Vt., took with him, as usual in such cases, seeds, from which he raised trees and planted an orchard. In this orchard stood the tree, from which all others of this variety, so far as my knowledge extends, have been derived. The place is now owned by NATHAN LOCKWOOD, jr., son of the above, who has been deceased many years. The original tree having been destroyed, and no sucker having sprung from its roots, the only remaining source of information relating to its origin (if any there be,) would seem to consist in some record left by the elder LOCKWOOD, or in family tradition, or in the memory of some of the older inhabitants of the neighborhood, who may have had a knowledge of the circumstances. With the aid of N. LOCKWOOD, jr., I have for a year past been seeking after such information; but all I can learn, is the traditional account that "the old man used to say the kind came from his native place." Whether the "kind came" in a *seed* or a *scion*, no one can tell. For my own part, I have no doubt that the original Lockwood tree was a *seedling;* since, had such a variety existed some fifty or sixty years ago in Westchester county, it must have come to the knowledge of nurserymen in the southern part of the state, and

* Mr. B. must allow us to except the *Ladies' Sweeting*, which, when in perfection, is to our taste the finest of all sweet apples for the dessert. ED.

through them, have gone into general cultivation.

The original name of this variety here was *Golden Sweet*. Afterwards, to designate it from the correct sort of that name, known in New-England, it was called Northern Golden Sweet. It seems preferable now, that the suggestion of the special fruit committee of the late Pomological Congress be adopted, by omitting the term "Golden," and calling it merely *Northern Sweet*. The proposed change may, at first, occasion some little embarrassment to cultivators in the valley of Lake Champlain, where it is now considerably disseminated; yet I think this will be more than overbalanced by the greater convenience resulting to fruit-growers generally, from its having a shorter and correct *standard* name.

Respectfully thy friend,

JONATHAN BATTEY.

Keeseville, N. Y., 12th mo. 20th, 1849.

PRACTICAL HINTS ON PRUNING GRAPE-VINES.

BY JAMES STEWART, WASHINGTON, D. C.

As the season for pruning grape-vines, with the majority of horticulturists, is rapidly approaching,—the middle of January being the time most commonly chosen,—I beg to offer a few remarks on this important operation.

The spur system, and the long-cane or renewal system, have both their admirers, and are most strenuously advocated by each of them, as being the *ne plus ultra* method, to obtain large and heavy crops of fruit. However, I beg to differ with the advocates of each of the above methods, although excellent crops can be obtained by both methods. The long-cane system, it is well known, *shows* the largest bunches; but, at the same time, the eyes *do not develop themselves regularly*, since frequently one-half of them remain *inert*, particulaly towards the *bottom of the vine*. Another consideration in this system is this; however splendid the bunches may be that are produced, you never see them develop and mature berries to the same size as in bunches on the spur system of pruning. The strong rod, that has been regularly spurred-in to one eye for a series of years, clearly demonstrates its superiority over the finest cane. Therefore, I do not think favorable of the *cane* system. First, because the berries are not swelled so well as on the spur system. Secondly, that many of the eyes or buds are not developed; nor can they be, however much the vine may be twisted or turned about; nor will all the depression that you can give the *terminal eyes* have the desired effect. Thirdly, that it is not *permanent*, but requires renewal every year.

The spur system is now so well understood by grape-growers, that a minute description of it is unnecessary. With *modifications*, it is my favorite mode; but as the usual practice in pruning vines, on this system, is to cut them back to one eye, and that eye is never so prominent at the *base* as it is midway on the shoot, it is an utter impossibility for the bunch developed from such an eye to be so large as the bunch obtained on the *long-cane system*. My objection to this method is this; that in cutting back to one eye, to keep the spurs

"close at home," as it is termed, you sacrifice much better developed eyes than the one you retain; and as a small eye *cannot develop a large bunch*, the natural consequence is small bunches, but well swelled berries. Vine cultivators will have noticed the above facts, which I point out. Now as both the cane and the spur mothods are deficient, I shall endeavor to show that a combination of both systems may be made of the utmost importance to the cultivator, insuring him bunches and berries of the largest size that are to be obtained by good cultivation.

To effect this, I should recommend, that in pruning vines on the spur system, *not to cut back to one eye*, but choose the most prominent eye on the shoot, where the wood is well ripened. Cut back to this, and with a sharp knife *blind all the other eyes* by carefully cutting them out, with the exception of the eye at the base, or, in other words, the eye that would be left in spurring back in the common manner. This must be carefully preserved, as the finest eye, as this is intended to furnish a shoot for the following year, but by no means to be allowed to produce any fruit; on the contrary, when five or six joints long, it should be stopped, and kept well stopped all the season, *to swell the buds up as prominently as you can, without causing them to break;* this must be carefully guarded against. The consequence of exciting your buds, on the shoot that you should cut back to, would be the loss of one year's crop.

If any cultivator will give this method of pruning an impartial trial the coming season, he will find that his bunches will be improved in size, as well as the berry. In pruning the season succeeding this preparatory step, the shoot that has borne the crop should be cut clean out; and the shoot that has been brought from the base to produce the following season, should have all its eyes cut clean out, with the exception of the most *prominent eye*, that has been selected to bear the fruit, and the one at the base, that is to produce a bearing shoot for the following crop.

I think it decidedly a bad plan to delay pruning so late as the generality of cultivators do. My plan is to prune, as soon as I perceive the *foliage turning yellow*, as then there is *no danger* of exciting the eyes, as the sap in the vine then has a downward tendency; whatever is left goes directly to swell up the other eyes, instead of being uselessly expended in nourishing *laterals* and useless wood, which, to a certainty, would have to be cut out. However, in pruning with the leaves on, I take especial care not to remove them—merely blinding the eye. In short, what is to be aimed at is this: assist your buds to swell up as prominently as you can for the coming season, as the finer they are the finer will your produce be; and the right time to prune, is when you observe the foliage turning yellow; then there is no danger. This system can be followed out of doors quite as advantageously as under glass; and when adopted, it greatly excels the common mode of pruning, as the produce is nearly as fine again; and should the vines possess a good border to grow in, and with the aid of stimulating liquid manures, they will approximate as near to perfection as may be. I have a few hints to suggest, on making vine borders, which I will hand you at an early day. Yours truly, JAMES STEWART.

Washington, D. C., December, 1849.

A FEW WORDS ON RUSTIC ARBOURS.

BY AN AMATEUR, NEW YORK.

THERE, are no doubt, many persons among your readers, who can indulge in costly vases and expensive ornamental structures as decorations for their gardens, but I am sure there is a much greater number who cannot, and who yet wish to give an air of beauty to their gardens or grounds. To all such, rustic buildings, rustic seats, rustic chairs and vases, are invaluable resorts, and I am not quite certain that they do not more universally please, than the more highly artificial form made by the aid of the carpenter.

One of the first and simplest rustic ornaments for the pleasure ground or garden, is the rustic seat, which is seldom out of place any where, except it be close by, or directly within the house itself, and if the house also is a rustic cottage, it is appropriate even there. After this come rustic boxes and baskets for growing flowers, and rustic garden buildings of various kinds.

The most useful and most agreeable of all these, is the simple *rustic arbor*, with projecting roof, covered with thatch or bark. I send you herewith (see FRONTISPIECE) sketches of two of these, copied from a French volume on garden decorations. I have had one of these executed in a secluded spot, and the effect is highly satisfactory, and a covered arbor like this is agreeable at all seasons of the year, when a walk in the garden is sought after.

Rustic work, made of the branches of trees indiscriminately, and exposed to the full action of the weather, perishes very speedily. But if it is protected from the rains by being under the shelter of an overhanging roof, as for example, covered like these arbors, it will last from 10 to 15 years without repairs. But by far the best material, where it can be obtained, is the wood of red cedar, as it will endure for 20 years or more. The stems of young cedars are usually straight, and may be split in halves so as to form excellent pieces for forming the inlaying or panel-work of the insides of rustic arbors, as shown in the figures; and the larger limbs will form good pilars and lattice work for the open portions of the exterior. The frame of such arbors as these, is made by setting posts, cedar or other, with the bark on, at the corners, and then nailing rough boards between the posts, in those compartments that are to be worked close. Over these boards the halved or split rods, (those from one to two inches in diameter, are preferable,) are nailed on so as to form any pleasing patterns which the taste or fancy may dictate.

A very little practice will enable any common workman who can use a saw and hammer to do the mechanical part of the work, and even ladies of taste may find much pleasure in planning and directing such operations. I would also remark that this is the best season for making all kinds of rustic work—not only because it is the right time for cutting the wood, in order to have it retain the bark well, but also because the labor of garden workmen is much cheaper now than at any other season of the year.

I have sometimes seen rustic work introduced in excess, and then, like many other things, it becomes ridiculous. In order to

guard unthinking novices against running into this error with garden decorations, I will conclude my remarks by quoting some observations of a foreign writer, Mr. GLENNIE, on this subject.

"The labors of some gardeners, and the fancies of some employers, seem to be devoted to the impossible object of cramming all the best features of nature into their limited space, and they manage to make every one ridiculous by its diminutive proportions, and the whole surpassingly absurd by presenting all the half-developed follies to the eye at once. Fish ponds that half a dozen ducks would crowd to inconvenience; summer houses that look as if the children had left one of their doll-houses about the place; rock-work, as if the gardener had forgotten to remove the stones he had raked off the beds; and, as to rustic work, the best use they can make of that, is to construct baskets, to be filled with stove exotics in the conservatory, and with geraniums in the hall, as if to present as great a contrast as possible in their rustic contrivances with the enterprise and luxuries of the present day. The drawing-room coal-scuttle, filled with gold fish, would be quite as much in place, and, to thinking people, not a whit more ridiculous. When people, therefore, object to rustic work, the first question is, where did they see it? because, if a man has seen it out of place, he may be excused for condemning it, although if seen in the proper place he may approve of it, as much as he formerly objected to it. The misapplication of anything ought not to be a reason for condemning it, and there is nothing more beautiful than rustic scenery, and this can only be made complete with rustic work." Yours, AN AMATEUR.

New York, Dec., 1849.

VINEYARDS AND THE ART OF MAKING WINE.

BY J. NOYES, HOLLYWOOD, MISS.

A great many persons are experimenting at the present time, with vineyard culture, and there is a good deal of inquiry regarding the best mode of making wine. The following article, which we copy from the New Orleans Crescent, contains the simplest and best practical directions for wine making, that we have yet seen, and we say this after having examined the best foreign treatises on this subject, and experimented a little, at various times, with fermentation, &c., ourselves.

Our readers will remember, that a vineyard for wine, must be manured and cultivated on a different principle from one where large crops of market fruit are desired—as it is the vinous quality of the juice that is the all-important point in the former case. Large size and good flavor may be attained by high manuring with animal manure, while the latter would injure the quality of fine wine. ED.

In DeBow's Commercial Review for September last, I published a letter on the vine culture at the South, and since that time I have received weekly, and almost daily, inquiries for further information on culture and soil, and my method of making wine from the Roanoke. To answer all such inquiries individually, upon such a lengthy subject, would be almost impossible; therefore I take the liberty of using your columns for that purpose; and, as much of this letter is a continuation on the same subject as that in the Review, I should feel much obliged if you would

copy that letter into your Weekly, and follow it up with this article; for, in all probability, a vast number of persons seeing this, will consider it incomplete, not having seen the other. The wine-growing business of the South, before long, will be of such vast importance, that to keep from the public any information likely to excite an interest in its cause, will deserve the highest censure. I feel bound, therefore, to share what little knowledge I have among those who wish it; for, giving does not impoverish, nor witholding make rich. I will now proceed to finish the article on culture—that being the business of the vigneron—before I commence wine-making, or the business of the vintner. As the soil of my vineyards is rather of a tenacious kind, and of course much injured by working in wet weather, I defer the last spring working until the buds begin to break or open, (which happens here early in April with the Roanoke, but much sooner with the other kinds,) for if the soil is worked too early, a two-fold injury most invariably follows, first it creates a stimulant to the plants, and excites the circulation of the sap, and pushes the buds too forward into life, thereby exposing them to the late spring frosts; and, in the second place, if worked early, the hard rains in March, pack the earth very close, thereby greatly retarding the growth of the vines; whereas if the work be left until after, the soil remains loose and friable, so that the air and light—so essential to the existence of vegetation—are admitted more readily to the roots, and prevent that sluggish growth that otherwise must follow, on renewing the soil. When the soil of the vineyard is found to be on the decline—which is easily discovered by the fruit degenerating in size and tenderness, and the growth of the wood being much shorter from joint to joint, and assuming an ash grey, instead of an olive brown color—where such signs make their appearance, the vigneron may with safety apply some new soil, taking care, however, to apply it with caution; for, the vine, in the vegetable kingdom, is far more intemperate than man, in the animal, and it never fails to collect all the most gross and the very filthiest materials within its grasp, to gorge itself with; and when it so happens that such soil is placed within reach, a most prolific growth of wood and foliage follows, and sometimes a good show of fruit; but before the latter matures, it rots and falls off. Seeing, then, that the vine is so intemperate in its desires, and that it really is susceptible to every change made in the soil, however trivial, much caution at all times should be used when renewing takes place. Rich manure should never be applied under any circumstances, no matter however poor the land may be. My plan is always to have by me a good supply of compost, of well pulverized and decomposed materials, and from one to two wheelbarrows full are scattered round each vine every year in the fall, and well raked into the surface soil, (my vines being twenty feet apart.) This plan keeps up a uniformity in the quality of the soil, and is much better than to apply a large quantity at once every two or three years, which acts so suddenly on the vines; for, be it recollected, although the vine is one of the grossest feeders on the soil, yet it is absolutely the most abstemious when kept in proper bounds, thriving in land so poor that it would scarcely sustain life in other plants.

My compost is made in the following manner. Every fall, after the field and garden crops are brought in, I have collected in a large heap, three feet high and six wide, all kinds of trash, such as cornstalks, potato vines, cabbage leaves and stumps, chips from the wood-yard, sweepings from the house and poultry yard, spent ashes and rotten log; and if not enough, fallen leaves from the woods. When the pile is made up, it lies all the fall, winter, and spring. In the meanwhile a cask is placed at some convenient distance near the house, which receives from day to day all the chamber lye, dish-water, soap-suds, and meat bones. Once or twice a week, this is carried and thrown over the compost heap. By the following spring, the heap shrinks down to about a foot high. Then we throw on it a load of sand, (the coarser the better,) for every three or four loads in the heap; the pile is then turned over and mixed well together and left so until next fall, but not allowed to receive any more

slops from the house—that being carried to a new heap. During the second year the compost heap is turned over once or twice at least, and in the fall is fit for the vineyard, for renewing the soil as aforesaid. The aspect or situation of the vineyard, I think somewhat important, and that of an eastern, or as near it as possible, I prefer, as from it we receive the rays of the sun, so grateful to vegetation in its early dawn. A southern aspect, so much desired in colder climates, does not so well here, the heat of which is so intense from twelve till four, that the skin of the fruit is much hardened thereby, and the air vessels in the leaves are contracted, and their breathing functions are impaired for the time, and the leaves in consequence are made to sicken and to droop, until the decline of the sun's powers brings relief in the dew of the night.

After having said so much, and explained so little on the work of the vigneron, I will now proceed on the work of the vintner. *Wine-making* I consider almost a mechanical art. To arrive at the arcana of which, however, it is necessary to pursue a regular method in the process, and by doing so any person of ordinary ability can acquire it. As my desire is only to inform novices in the art, or young vintners who will be content with simple rudiments unconnected with technical terms, I shall set down my plan in the plainest possible manner; for it is a well known fact, that thousands of writers of the present day, undertake to enlighten the uninformed, and their manner in describing things is so hard to comprehend, that no one less informed than themselves can understand one word of the subject on which they undertake to write. I speak from experience, as I have by me a number of works on the subject I am now writing of, and scarcely one of them I consider worth reading, and from the cause above stated. This fault arises, no doubt, from the fact that few practical men find time to write, while fewer still who write, give themselves the trouble to practice what they write about; thus illustrating the motto, that "an ounce of practice is better than a pound of theory." So much for the introduction, now for the practice.

The plan I am about to describe is on a small scale, but if the vintage is large, the utensils can be altered to suit. The vintage being ripe, you should have already been provided with a few clean tubs. Fresh emptied whiskey barrels cut in two, do very well. Your fruit being gathered, reject all rotten and under ripe; throw into one tub as much as will cover the bottom one inch deep; take a new maul, (beech if possible, as this wood is an advantage to new wine,) such as is used for splitting wood; let it be cut square at the end; use this to crush the fruit, in a similar way persons use a dasher in churning butter, and and with no more force than necessary to burst the skins. The fruit, when thus prepared, is called *marc*, and is fit for pressing in this state—which must be done in the following way: take press-cloth—the form of which I will hereafter describe—double it and place it in a large wooden bowl; then put on the cloth as much marc as it will contain; when folded up, tie it round with a strong cord, and place it on the platform of the press, and press it with as much force as you please, the form and plan of which is not material, so that the largest quantity of juice is obtained; while one cloth is being used at the press, a second should be filled so as to save time, as it is very important that all the juice should be pressed out as soon as possible, after the first operation has commenced.

The juice of all the vintage having been expressed, carry it to the working tub in the cellar, and it is no longer to be called juice, but receive the name of *must*. This tub containing the must should be covered over with a clean linen cloth, and left undisturbed for twenty-four or thirty-six hours. If the night be cold, throw over it a blanket, but be sure to remove it in the morning, in order to keep an even temperature, which should be if possible, not below 65° or above 75° Fahrenheit—(mine at the vintage is 72°.) You will observe by-the-bye, that the juice will require no other straining than it received at the press by passing through the press-cloth; and by this plan both waste and much time are saved. The must having been allowed to settle, as directed above, should now be drawn off into prepared casks, to work for ten or twelve days, ac-

cording to the temperature of the weather at the time, and kept filled up morning, noon, and night for four or five days, after which twice a day will do. There must at the time of turning be sufficient spare must in reserve, say six gallons to every barrel after all the casks are full, and this should be kept near the cask, to fill them up from time to time. The filling up must be done with an earthen or china pitcher having a lip, and at no time must any metalic article be suffered to drop into the must, as it is apt to injure the color of the wine, as well as to affect the taste. At the filling up always remove whatever scum may be at the bung-hole, and keep a small tub or dish under each cask, to receive the drippings, as the clear will do for filling up.

At the end of ten or twelve days the working will have ceased, which you will know by seeing the wine clear at the bung-hole, and the hissing noise stopped in the cask, and all floating beads disappear from the surface. If the wine (for recollect it is no longer must) show these indications, it has ceased working, and may be stopped in the following manner: Set the cask upright, and place over the bung-hole a clean piece of paper; lay the bung on top, and press both into the hole as hard as you can with your hand, without any other instrument. This is mainly to exclude the air—see to it once a day, for three or four days, that it be not disturbed. At the end of that time place your ear close to the bung, and if no hissing sound proceed from the cask, remove the bung, disturbing the wine as little as possible; fill the cask to within a fraction of the under edge of the hole, and drive the bung down tight; but should the wine at this last examination not have ceased working, the bung and paper should have been placed as before, and left three or four days longer.

The wine, thus being stopped down, will require no more attention until bottling time in the following March, and being about the time I think all wines should be bottled or transvased. If you conclude to keep it in cask a second year, it must be transvased, letting no more run from it than is bright and clear, the hullage, or thick, being turned into a smaller cask and fined for use. The cask you intend to bottle, do in the following manner; remove the bung, or, my plan is to bore a hole through the bung with a large size gimlet, (as starting the bung disturbs the wine,) without disturbing the cask in the least possible. Let this be done, not twenty-four hours before bottling, which is the method most persons take, but about ten minutes, and see that every thing has been got ready before, the cask having been tapped at the time of turning with a tight bottling cock, and four inches from the bottom of the cask, proceed to bottle, taking care only to draw off about two-thirds. I have with me at this time a careful servant, as it is a business for two. I allow only about a dozen bottles to be filled before I commence to cork, giving only about ten minutes for the air to escape from the bottle, for if longer the bouquet is much injured, and wine without or deficient in this quality, is like a rose without fragrance. Your bottles should be filled to about one-third of the neck above the shoulder, and on no account suffer your corks to be soaked in any thing before being used, as they will shrink after from the wax, and perhaps cause your wine to spoil, whereas, if driven in dry they swell in the bottle, and the wax will adhere more perfectly. With this precaution I never loose a bottle of wine, as I generally attend to the old adage, that any thing worth doing at all is worth doing well. Reject all corks that arehard and porous. When all are corked, with a sharp knife trim off close down to the glass before waxing, after which pack in dry saw-dust, in binns or casks, in a cool cellar, with a uniform temperature, and in six months you may try it, but twelve will be better.

Having got through making and bottling, I will before I conclude, say a word about casks, tubs, wax, &c., &c. In regard to the casks, I think it always best to buy new, and have them made of the best materials, and as soon as brought home, filled up with cold water, and soaked thus twenty-four hours; then emptied and half-filled with boiling water, shaken about and turned over three or four times during an hour, and while hot, emptied and placed pole downwards forty-eight hours to dry; then sulphured in the following manner—

melt stone sulphur in an iron sauce-pan, have ready strips of muslin twelve inches long and half an inch wide, dip them in the sulphur while hot, (these are called matches,) double two or three of them over the end of a wire, set fire to them, and let them down to the bottom of the cask at the bung hole, keep them burning as long as they will; repeat this as long as a match will burn, and when the cask is full of vapor, bung it up tight, and it is fit for the reception of the wine, and will keep for months, so that before the vintage be ripe all the casks can be ready for use. The working tub should be large enough to contain all the must of the vintage, unless different colored wines are to be made, in that case separate tubs will be required. This tub should be placed in the cellar, on a stand or strong bench, high enough for the casks, at the turning, to be rolled under and filled at the spigot, placed one-fourth from the bottom of the tub, as performing the turning in any other way, will be troublesome as well as wasteful.

Wax should be made in the following way:—take one pound of resin and one pound of bees-wax, with an ounce of pulverised Spanish brown, and melt them in a saucepan over a charcoal fire, keeping them stirred, and while hot the bottles are to be dipped in so as to have about one-fourth of an inch of glass covered, as more is unnecessary. In bottling, every vintner should be provided with a bottling-stool, which may be seen at almost any porter-cellar, and without it the business cannot be well done. Across it you sit—the end forms a table with a rim to keep on your corks and driver; on it is fixed a thick soft piece of sole leather, on which to place your bottle for driving the cork; on the table also is fixed a cork-squeezer, for squeezing the cork two or three times before it enters the bottle, as this always should be done when corks are used dry, as they yield much better to the bottle, and go further down. Fly press cloths are made with strong coarse linen, such as is used by manufacturers in baling up dry goods. Each cloth is made the size of a bed sheet. Linen is by far the best material, as it gives out no linty fibers as cotton or woolen will, and too much care cannot be taken to avoid all extraneous matter coming in contact with the must, as it is apt to excite and produce reactions, and cause dryness and sometimes sourness in the wine.

Transvasing—I do not approve of this operation oftener than it can be helped, as it is merely to produce flatness as well a brightness in the wine, and mine is always characterised by the latter and never by the former quality; and I hope it will not be considered presuming when I state that I never drank any wine in my life, foreign or domestic, that possessed two of the richest qualities in the same degree that my wines have. My plan is never to transvase from the time it is stopped down until the March following; for as often as wine comes in contact with the air, so often does a great portion of the bouquet and flavor of the fruit escape. Some may think keeping wine so long without transvasing, it would not come fine in time for bottling, but I have never yet had any to fail.

In speaking of the maul for crushing the fruit, I named beach-wood as the best, and such is the fact that in countries where wine is made in large quantities, and from various causes large qantities become thick and cloudy, and to resort to finings made from isinglass or whites of eggs, as we do, would be too expensive, they therefore take new beach-wood and chip it up fine, dry it well in the sun, and from one to two pounds is put into a hogshead of wine, rummaged well with a broomstick, stopped down and left to settle, and it acts the same way as a more expensive mode. In making wine on a large scale the better way is to crush the fruit between two wooden rollers, horizontally meeting each other, turned with a crank.

This article has been extended far more than it would have been, had it been in the hands of an able writer; but as most persons requesting it, wish for a plain detailed account, at the same time, while I have endeavored to meet their views, I have thrown it together in as short a space as I knew how; and all who benefit from its contents are heartily welcome, for in a similar way the writer has obtained the materials of which he has built his small temple of knowledge, which is yet so imperfect that if he lives a hundred years he will always fine gaps to fill up. J. Noyes.

MEMOIRS OF JOHN BARTRAM AND HUMPHREY MARSHALL, *with Notices of their Botanical Cotemporaries. By* WM. DARLINGTON, *M. D., L. L. D. With illustrations. Octavo, pp.* 585.

[We are indebted to a Philadelphia correspondent for the following notice of this work.* ED.]

This book tells its own story admirably; as a picture of colonial life it is truely graphic, but as the biography of an honest, self-educated man of genius, it is beyond all praise. While we say this, we must remark that some further expurgations from the text would have made the work more valuable, and less open to the criticisms of those, (and we envy them not,) who cannot appreciate the beauty, the simplicity, the sterling good sense, but above all the natural character of JOHN BARTRAM. He was among the very first, if not the first, who turned their scrutinizing eyes to the wonderful flora of this continent, and who, by their zeal and industry, were the instruments of adding most materially to the beauties of the unrivalled parks and gardens of Europe.

Mr. BARTRAM was of American birth, respectably connected, and inherited a moderate fortune in land, but having early imbibed a fondness for the study of natural history, set up the first commercial botanical garden in the province of Pennsylvania. It still exists in the possesion of his granddaughter, Mrs. Carr, and her husband, on the banks of the Schuylkill, near Philadelphia, rich in fine old specimens of trees and shrubs. Especially to be noticed in that fine old garden, is the enormous cypress, (*Cypressus disticha,*) the larges ttree known in that region of country. And here we would incidentally remark, without intending to depreciate the one or eulogise the other, the great advantage the planter of trees possesses over the lover of the green-house, in *perpetuating* the memory of his labors; the one places his trees in the ground for posterity to love and admire, and posterity, (barring some insane descendant's axe,) will be sure to pay its tribute at the shrine; while the too frequent fate of the green-house, when its owner leaves the scene he so much enjoyed, is destruction or decay. The Arboretum survives, in at least one fine specimen; it may be overrun with weeds, but a noble tree or shrub attests its owner's taste, and is his best monument; the green-house, without daily and nightly care, *as much attention as a young baby*, soon loses all its attraction, and is no more. We might safely compare the two operations thus: the green-house lover is like the actor, remembered by his cotemporaries, *and by them only*, while the tree-planter is the author, who survives the representation of the painted scene, and in his works lives after them. Could we possess absolute power, we should at once say to some of our friends who only plant in tubs and pots, "go at once and plant a Cedar of Lebanon, a Deodara Cedar, all the magnolias, that you may do something by which you will be thanked by posterity." HUMPHREY MARSHALL, also commemorated in this volume, did this, and now that there

* Dr. DARLINGTON has prepared this volume with a sketch of the "Progress of Botany in North America," which will interest botanical readers. We regret to see that the artist employed to sketch that picturesque old stone mansion—BARTRAM's house—standing in the midst of the Bartram garden, still well preserved and finely covered with ivy, should have so utterly failed in the plate which is the frontispiece to this work. The house is a gem for the lover of the picturesque, and this cut is a fright for the lovers of—anything. Help it by all means in the next edition. ED.

is no other monument to him, and his garden is uncared for, an enormous Magnolia acuminata rears its head to the skies, and at first sight induces the question, "Who planted that?" No inscription is needed to tell of worthy deeds; his reputation survives, and we feel satisfied that MARSHALL, with his rural pursuits and botanical pleasures, must have been an honest, worthy, thinking man; and such he was—not as eminent as BARTRAM, but with his fondness for research, and love of natural history. Both passsd an innocent and useful life, and while their pursuits were their own reward, have reaped the additional fame of a worthy commemoration by a valued and useful follower of their tastes, and eminent botanist.

By a curious coincidence, this large volume of Dr. DARLINGTON's, on which he has expended no little labor, induced by the love of the topics discussed by BARTRAM and his celebrated correspondents at home and abroad, we find lying, as we write, in juxtaposition with the erudite works of Dr. ASA GRAY and of Dr. TORREY. Here are the records of the beginning of the study of botany and its full fruition. When BARTRAM and his correspondents commenced their researches into the mysteries of Nature, they were possessed of blind guides; order had not sprung into existance; JAMES LOGAN writes:

[LOGAN TO BARTRAM.]

"Friend J. Bartram:—Last night, in the twilight, I received the enclosed, and opened it by mistake. Last year Peter sent me some tables, which I never examined till since I last saw thee. They are six very large sheets, in which the author (Linnæus) digests all the productions of Nature in classes. Two of them he bestows on the inanimate, as stones, minerals, earths; two more on vegetables, and the other two on animals. His method in the vegetables is altogether new, for he takes all his distinctions from the stamina and the styles, the first of which he calls husbands, the other wives. He ranges them, therefore, under those of 1 husbands, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 20, and then of many husbands. He further distinguishes by the styles, and has many heads, under which he reduces all known plants.

The performance is very curious, and at this time worth thy notice. I would send it to thee, but being in Latin, it will want some explanation, which after I have given thee, thou wilt, I believe, be fully able to deal with it thyself, since thou generally knows the plants' names." p. 307.

LINNÆUS, thus characterised by a cotemporary! "His performance is very curious!" How little did the writer know of his future fame, unequalled by any previous or subsequent discoverer.

The correspondence, while it pictures the trials and exposures of the early adventurers among the mountains, and Indians, and savannahs, in pursuit of specimens for the enthusiasts abroad, shows plainly the amount of ignorance under which they all labored; indeed a person possessed of little love for nature would be almost pardoned for declaring that if a parcel of schoolboys were now to sit down and write as these letters are written, they would be laughed at. But knowledge has made vast strides since the year 1730; particularly is this the case in botany. "If we embrace," says HUMBOLDT in his *Aspects of Nature*, (so pleasantly translated by Mrs. SABINE, and just published in Philadelphia,) "in one general view the different species of phænogamous plants at present contained in herbariums, the number may now be estimated at considerably above 80,000."*

* "We must carefully distinguish between different questions: How many species of plants are described in printed works? how many have been discovered, *i. e.* contained in herbariums, though without being described? how many are probably existing on the globe? Murray's edition of the Linnean system contains, including cryptogamia, only 10,042 species. Willdenow, in his edition of the Species Plantarum, between the years 1797 and 1807, had already described 17,457 phænogamous species, (from Monandria to Polygamia dicœcia.) If we add 3000 cryptogamous species, we obtain the number which Willdenow mentions, viz. 20,000 species. More recent researches have shown how much this estimation of the number of species described and contained in herbariums falls short of the truth. Robert Brown counted 37,000 phænogamous plants. I afterwards attempted to give the geographical distribution (in different parts of the earth already explored) of 44,000 phænogamous and cryptogamous plants. Decandolle found in comparing Persoon's Enchividium with his Universal System in 12 several families, that the writings of botanists and European herbariums taken together might be assumed to contain 56,000 species of plants. If we consider how many species have

Linnæus was acquainted with comparatively but few; how limited were the means of knowledge with our "King's Botanist," Bartram; how few his resources for acquiring the little that so few knew! Peter Collinson and his other correspondents, write constantly to send tortoises, wasps' nests, and other things the very names of which they were unacquainted with; and yet they were performing their office, spending their money† to bring together the unknown things of America, where science could name and classify them. They too had a planting taste that has not spread in proportion to the increase of knowledge, for our best trees and shrubs; they write for more Franklinias, (now *Gordonia subescens*,) more Magnolias, and especially were they anxious to possess our magnificent Water-lily, (*Nelumbeum luteum*) one of the most superb plants of America, both for leaf and flower; and yet we venture to say not one in ten thousand of our countrymen have had *their* curiosity awakened to see the expanded treasure; though it grows in all its glory within two miles of the now old (in an American sense) Independence Hall. But a favored few know its locale or ever see its curious flower, or the fruit equally agreeable and somewhat similar in flavor to the Chinquapin. Why is this, unless, indeed, we make the excuse that it is difficult to cultivate, *or*, that little curiosity on these subjects exists among us?

But we must turn to the book and endeavor, by extracts, to exhibit the character and the simplicity of this correspondence.

In a late letter from Bartram, he thus beautifully describes the beauties of nature; it seems as if he had concentrated his whole soul in this one effort:

"What charming colours appear in the various tribes, in the regular succession of the vernal and autumnal flowers—these so nobly bold—those so delicately languid! What a glow is enkindled in some, what a gloss shines in others! With what a masterly skill is every one of the varying tints disposed! Here they seem to be thrown on with an easy dash of security and freedom; there they are adjusted by the nicest touches. The verdure of the empalement, or the shadings of the petals, impart new liveliness to the whole, whether they are blended or arranged. Some are intersected with elegant stripes, or studded with radiant spots; others affect to be genteely powdered, or neatly fringed; others are plain in their aspect, and please with their naked simplicity. Some are arrayed in purple; some charm with the virgin's white; others are dashed with crimson; while others are robed in scarlet. Some glitter like silver lace; others shine as if embroidered with gold. Some rise with curious cups, or pendulous bells; some are disposed in spreading umbels; others crowd in spiked clusters; some are dispersed on spreading branches of lofty trees, or dangling catskins; others sit contented on the humble shrub; some seated on high on the twining vine, and wafted to and fro; others garnish the prostrate creeping plant. All these have their particular excellencies; some for the beauty of their flowers; others their sweet scent; many the elegance of foliage, or the goodness of fruit; some the nourishment that their roots afford us; others please the fancy with their regular growth; some are admired for their odd appearance, and many that offend the taste, smell, and sight, too, are of virtue in physic." p. 398.

The following are fair specimens of the large correspondence of Peter Collinson, and exhibit the amount of knowledge then possessed by him. They show the progress of the introduction of our trees, &c., into Europe, with some natural touches of character.

[COLLINSON TO BARTRAM.]

"As Lord Petre desired to see thy letters, they are all there. He admires thy plain natural way

since that period been described by travellers, (my expedition alone furnished 3,600 of the 5,800 collected species of the equinoctial zone.) and if we remember that in all the botanical gardens taken together there are certainly above 25,000 phænogamous plants cultivated. we shall easily perceive how much Decandolle's number falls short of the truth. Completely unacquainted as we are with the large portions of the interior of South America, of Africa, Madagascar, Borneo, and Central and Eastern Asia, the thought rises involuntarily in the mind, that we may not yet know the third or probably even the fifth part of the plants existing on the earth!"

Professor Lindley, in his "Vegetable Kingdom," published in 1848, estimates the number of the species then known at 92,930, including Algæ, Fungi, Lichens, Mosses, Ferns, and flowering plants.

† We must say, even taking into account the difference in the value of money, the prices paid were very small. The king allowed Bartram only fifty guineas a year to pay his travelling expenses and for specimens. Other payments will strike the reader of the book as ridiculously small.

of writing, and thy observations and descriptions of several plants. For want of them, I shall only take notice of thy proposal, in one of them, for an annual allowance to encourage and enable thee to prosecute further discoveries. Lord Petre is very willing to contribute very handsomely towards it. He will be ten guineas, and we are in hopes of raising ten more. This, we think, will enable thee to set apart a month, two, or three, to make an excursion on the banks of the Schuylkill, to to trace it to its fountain. But as so great an undertaking may require two or three years, and as many journeys, to effect it, so we must leave that wholly to thee. But we do expect that after harvest and when the season is that all the seeds of trees and shrubs are ripe, thou wilt set out; and them that happen not to be ripe when thou goes, they may have attained to maturity when thou comes back. We shall send thee paper for specimens and writing, and a pocket compass,—expect thee 'll keep a regular journal of what occurs every day; and an exact observation of the course of the river, which, with a compass, thee may easily do." p. 72.

"Dear Friend—As thee has given me many instances of thy curious speculative disposition, it has put me on enlarging thy knowledge in natural enquiries, as the earth is filled with wonders, and every where is to be seen the marks and effects of Almighty power. Most things were made for the use and pleasure of mankind; others, to raise our admiration and astonishment; as, in particular, what are called fossils,—being stones, found all the world over, that have either the impressions, or else the regular form of shells, leaves, fishes, fungi, teeth, sea-eggs, and many other productions. That thee may better apprehend what I mean, I have sent thee some specimens, in a packet of paper for specimens of plants for Lord Petre, with some seeds, and a pocket compass. Captain Savage has promised to take care of the parcel. In the course of thy travels, or in digging the earth, or in thy quarries, possibly some sorts of figured stones may be found, mixed or compounded with earth, sand, or stone and chalk. What use the learned make of them, is, that they are evidences of the Deluge." p. 73.

"One thing I must desire of thee, and do insist that thee oblige me therein; that thou make up drugget clothes, to go to Virginia in, and not appear to disgrace thyself or me; for though I should not esteem thee the less, to come to me in what dress thou wilt, yet these Virginians are a very gentle, well-dressed people, and look perhaps more at a man's outside than his inside. For these and other reasons pray go very clean, neat, and handsomely dressed, to Virginia. Never mind thy clothes; I will send more another year." p. 81.

"By what I can observe of the fine Laurels, No. 102 and 108, Chamœrhododendros, their seed seem to be light and chaffy, which is the worst sort of seed to send over for keeping; that I don't expect we shall ever raise them here, but must depend on plants; so, prithee, go at a proper season to the nearest place, and load a pair of panniers or baskets, with young plants, and set some in thy garden to take root, and send half a dozen at a time; for this seems to me to be the best tree that has been discovered in your province.

Indeed, in South Carolina, there is the *Magnolia*, or great Laurel-leafed Tulip Tree, which is an evergreen—grows sixty feet high—its leaves are as large again as yours, and the flowers white, of a rose or water-lily figure, but as large as the crown of one's hat. There is one in England that flowers every year finely; and I have several plants in my garden.

Another particular thing I must request, that is to get a handful or two of White Cedar cones, for Philip Miller; for, in separating the seeds, by accident he had none of the White Cedar cones." p. 96.

"I assure thee thou canst not do me a greater pleasure than to entertain me with any history of nature. But this I must tell thee, as a friend: I am afraid thou takes up too much of thy time to oblige me. I am so much thy friend that I entreat thee not to let any of thy affairs suffer on my account.

Indeed, when thou art collecting, thou art paid for it. I hope this year will prove kindly, that we may have a collection of oaks. Send but a few of the White Oak, and the Swamp Spanish Oak. I believe most thou sent are come up, and thrive finely. We have a great quantity of the Cherry up; it is a fine plant. Red Cedar comes up very strong; but I don't see the Sassafras. Tulip Poplar in great abundance. This, with most other of your country seeds, will some come up the first—but more the second year. Send me more Tulip Poplar. Some of your Swamp Laurel or Bay (Magnolia glauca, L.) is come up, and thrives well; but we want a great deal more of its cones. It is a fine plant; and when the wind turns up the silver side of its leaves, it has a pretty effect. As to the Bay Laurel, called Ivy (*Kalmia, L.*) it is in vain to send any of its seed, (unless soon as gathered sown in a bed of mould,) for it is so small and chaffy, it will not keep. I have had a great deal from Virginia; but none grows. There is no way so good as plants. I have sufficient for myself, but Lord Petre may want some. But a year or two hence may do. I am afraid a like fate will attend the seed of that noble Laurel thou discovered near the Blue Mts. A cargo of growing plants will be a rarity worth accepting. Next time thou must try what thou canst do.

First, get a strong cargo of young plants into thy garden. Pray make it thy business this fall; and when they have stood a year, and drawn root, they may with more safety be sent, as opportunity offers." pp. 98, 99.

I shall now, tell thee something, which very

much pleased me, and will surprise thee. The box of turtle eggs, (which was an ingenious thought of thine to send,) on the day I brought it from on board ship, being the 20th of October, I took off the lid having a mind to see the eggs, and on peeping about I saw a little head just above the ground, and while I was looking, I saw the ground move in a place or two more. In short, in the space of three or four hours, eight tortoises were hatched. It was very well worth observing, how artfully they disengaged themselves from the shell, and then with their fore feet scratched their eyes open. They have had many visiters, such a thing never happening, I dare say, in England before. They seem to be all one sort, but thee mentions two. I tried if they would eat, with lettuce leaves, &c., or if they would drink, but they regarded neither. But after they had been crawling about three or four days, they buried themselves in the earth in the box, where they continue. Early in the spring I design to turn them out at Lord Petre's, who has large ponds, if they are water turtles." p. 109.

"I commend thy method of sowing Parsley, &c. with the fir seed. In the northern provinces of Germany, where it is sandy and barren and will produce little but firs and pines, to prevent the seedlings being burnt up, they sow oats with their seed, to screen it in the summer, and its dry straw protects it in the winter; for they do not reap the oats; and one reason may be, in such a barren soil, they are not worth it." p. 191.

"This reminds me of the elegant species of the Water Lily (*Nelumbium luteum, Wild,*) that is in the Jerseys. Does it occupy such a depth of water that the roots can't be come at? Thou art ambitious of plants from us; but here is the most charming plant of Asia including China and Egypt, in thy neighbourhood, and yet so little is thy curiosity, or industry, that thou can'st not avail thyself of so great a curiosity. Thou that hast springs in thy garden to make a pond for its reception; or a river so close by, if more proper for its culture. Prithee, John, never more let me reproach thy want of taste and curiosity in this article. I wish thou could employ some person to gather the seeds when ripe, and put in a bottle of water, with a little sand or earth in its bottom. I conceive, thus preserved, they would come in a growing state to us. This I have mentioned often before; but *roots* well packed in a great deal of wet moss, in a box, would do better.

If I was in thy place, I should spare no pains or expense to be possessed of a curiosity, that none in the province could boast of beside thyself; which thou art ambitious of in other plants in no comparison so charming when in flower." p. 222, 223.

"I have a sprig (in flower) of the *Kalmia* in water, and it stares me in the face all the while I am writing, saying, or seeming to say, 'As you are so fond of me, tell my friend, John Bartram, who sent me, to send more to keep me company; for they will be sure to be well nursed and well treated.'" p. 228.

"They enrich our knowledge, and anticipate our pleasures, and give us a good idea of the riches in store, to gratify the botanists of after ages. O, Botany! delightfulest of all sciences! There is no end of thy gratifications. All botanists will join with me in thanking my dear John for his unwearied pains to gratify every inquisitive genius. I have sent Linnæus a specimen, and one leaf of Tipitiwitchet sensitive; only to him would I spare such a jewel. Pray send more specimens. I am afraid we can never raise it. Linnæus will be in raptures at the sight of it." p. 251.

There is too little from BARTRAM himself, but the following show his tone, and the nature of his connection with his friend COLLINSON:

[BARTRAM TO COLLINSON.]

"In thy letter of December the 20th, thee supposes me to spend five or six weeks in collections for you, and that ten pounds will defray all my annual expenses; but I assure thee, I spend more than twice that time annually; and ten pounds will not, at a moderate expense, defray my charges abroad; besides my neglect of business at home, in allowing, harvest, and seed time.

Indeed I was more than two weeks in gathering the small acorns of the willow-leafed oak, which are very scarce, and falling with the leaves, so that daily I had to rake up the leaves and shake the acorns out, before they were devoured by the squirrels and hogs; and I reckoned it good luck if I could gather 20 under one tree, and hardly one in twenty bore any. Yet I don't begrudge my labor; but would do anything reasonable to serve you. But by the sequel of thy letter, you are not sensible of the fourth part of the pains I take to oblige you." p. 119, 120.

December, 1738.

"Dear Friend:—I have performed my journey through Maryland and Virginia, as far as Williamsburgh, so up James river to the mountains, so over and between the mountains, in many very crooked turnings and windings, in which, according to the nearest computation I can make, between my setting out and my returning home, I travelled 1100 miles in five weeks time; having rested but one day in all that time, and that was at Williamsburgh. I happened to go in the only time for gathering of seeds—the atumnal—both in Maryland and Virginia; and the exceeding mild fall, favored the opportunity on and between the mountains, whereby I gathered abundance of kinds of seeds, in perfection, which have not ripened for several years, because of the early frosts, which came a month or six weeks sooner

than they did this year. Indeed, beyond the mountains in Virginia and Pennsylvania, there is a great variety, that I saw; and the inhabitants say, the ground is covered with delicate blue flowers in the spring, which are not to be found after the hot weather comes on. When I first began to find many curious seeds, I wrapped them up in paper separately, and put them into my leather bags; but in riding and shaking, they fretted the paper and mixed together. So, afterwards, I gathered alltogether as I found them, which I send to you all mixed, and as they are most of them perennials, I suppose they will do well enough sown together." p. 120, 121.

"I am greatly obliged to thee for thy necessary present of a suit of clothes, which just came in the right time; and Barclay's Apology, I shall take care of for thy sake. It answers thy advice, much better than if thee had sent me one of Natural History, or Botany, which I should have spent ten times the hours in reading of, while I might have laboured for the maintenance of my family. Indeed, I have little respect to *apologies* and disputes about the ceremonial part of religion, which often introduce animosities, confusion, and disorders in the mind, and sometimes body too: but, dear Peter, let us worship the one Almighty Power, in sincerity of heart, with resignation to his Divine will,—doing to others as we would have them to do to us, if we were in their circumstances. Living in love and innocency, we may die in hope." p. 159.

September 5th, 1742.

"Dear Peter,—I am lately returned from the Katskill Mts., having gathered a fine parcel of the Balm cones, just at the time of their full ripeness; with many other curious seeds, and other fine curiosities. This hath been a happy journey: and I met with our friend, Doctor Colden, who received and entertained me with all the demonstrations of civility and respect that were convenient. He is one of the most facetious, agreeable gentlemen I ever met with; and his capacity thee may judge of, by the last account he gave thee of the economy of the Five Nations, and some other subjects which he may soon acquaint thee with. I hope to give thee a fuller account of him this fall." pp. 160, 161.

The following letter will give modern readers a taste of the feelings of the colonists—even the milder and more peaceable of them, regarding the Indians:

September 30, 1763.

Dear Peter—I have now travelled near 30 years through our provinces, and in some twenty towns in the same provinces, and yet never, as I remember, once found a single species in all after times, that I did not observe in my first journey through the same province. But many times I found that plant the first, which neither I nor any person could find after; which plants I suppose were destroyed by the cattle. The first time I crossed the Shenandoah, I saw one or two plants, or rather stalk and seed of the *Meadia*, on its bank. I jumped off, got the seed and brought it home, sent part to thee, and part I sewed myself; both which succeeded, and if I had not gone to that spot perhaps it had been wholly lost to the world. John Clayton asked me where I found it. I described the very spot to him, but neither he nor any person from him could find it after. Oh! what a noble discovery I could have made on the banks of the Ohio and Mississippi if I had gone down, and the Indians had been peaceably inclined—as I knew many plants that grew on its northeast branches. But we are at present all disappointed. Thy son William wanted to go as draughtsman.

I read lately, in our newspaper, of a noble and absolutely necessary scheme that was proposed in England, if it was practicable. That was, to search all the country of Canada and Louisiana for all natural productions, convenient situations for manufactories, and different soils, minerals and vegetables. The last of which I dare take upon myself, as I know more of the North American plants than any others. But this would alarm the Indians to the highest degree. All the discoverers would be exposed to the greatest savage cruelty—the gun, tomahawk, or revengeful devouring jaws. Before this scheme can be executed, the Indians must be subdued, or drove about a thousand miles back. No treaty will make discoverers safe. Many years past, in our most peaceable times, far beyond our mountains, as I was walking in a path with an Indian guide, hired for two dollars, an Indian man met me, and pulled of my hat in a great passion, and *chawed* it all round—I suppose to show me that they would eat me if I came into that country again. * * * * * *

The most probable and only method to establish a lasting peace with the barbarous Indians, is to *bang them stoutly*, and make them sensible that we are men, whom they, for many years, despised as women. Until then, it is only throwing away men, blood and treasure to make peace with them. They will not keep to any treaty of peace. They are all with their fathers (alias) the French, resolved to drive the English out of North America. And although some tribes pretend to be partial friends, it is only with a design to supply the rest with ammunition to murder us. Perhaps now, and only now, is the critical time offered to Britain to secure not only her old possessions, but her so much boasted new acquisitions, by sending us sufficient supplies to repel effectually those barbarous savages. * * * * * *

I am heartily glad that young Lord Petre is possessed of the botanical taste of his father. I wish he may resemble him in virtue. I have in-

tended to inquire after him and his mother in every late letter. The pear raised from his seed hath borne a number of the finest relished fruit. I think a better is not in the world."*

Some original letters from LINNÆUS, known to have formerly been in the Bartram family, are missing; they have probably been abstracted to send to Europe, before their value was sufficiently appreciated.

We warmly commend this work to all lovers of natural history and natural people.

Yours, PHILADELPHIA.

FOREIGN NOTICES.

ON THE ODORS OF PLANTS AND THE MODE OF OBTAINING THEM.—

"Unbidden earth shall wreathing flowers bring,
And fragrant herbs the promises of spring,
As her first offering to the ruling king."—*Dryden's Virgil.*

The exquisite pleasure derived from smelling at fragrant flowers would almost instinctively induce man to attempt to separate the odoriferous principle from them, so as to have the perfume when the season denies the flowers; and thus we find the alchemists of old torturing the plants in every way their invention could devise for this end; their experiments were not wholly unsuccessful, and indeed upon their foundation the whole art of perfumery has been reared. Besides the uses in perfumery, the essential oils (the matters to which the odor of the plant is due) are used by druggists to cover the bad taste of medicines. Peppermint, Coriander, and Cassia, are much used for this purpose, and as the sense of smell has much to do with taste, their utility is obvious; by closing the nostrils, very nasty physics may be swallowed without tasting, particularly Rhubarb. We here see the advantage of the domestic subterfuge of "a little peppermint" with a home "dose of castor oil," or a peppermint lozenge before the "cup of salts and senna."

Without recapitulating those facts which may be found diffused through nearly all the old authors on medical botany and works of this character, we may state at once the mode of operation adopted by the practical perfumer of the present day for preparing the various extracts or essences, waters, oils, &c., used in his calling. The processes are divided into four distinct operations.

1. *Expression* or the squeezing the odor-giving part of the plant between two metal plates, which are generally made hot (though sometimes cold, and hence the term "cold drawn") and forced together by a powerful screw. This process is only adopted where the plant is very prolific in its oil, *i. e.*, odor.

2. *Distillation.*—The plant or part required is placed in a metal pan, and covered with water; to the pan a dome-shaped lid is fitted, terminating with a pipe, which is twisted cork-screw fashion, and fixed in a bucket, with the end peeping out like a tap in a barrel. The water in the still is made to boil, and having no other exit, the steam must pass through the coiled pipe, which being surrounded by cold water in the bucket, condenses the vapor before it can arrive at the tap; with the steam the volatile oil or perfume rises, and is liquified at the same time; the liquids which thus run over, on standing for a time, separate into two portions, and are finally divided with a funnel having a stopcock in the narrow part of it. By this process, the majority of the oils or perfumes are procured; it so happens, however, that the finest odors, the *recherche*, as the French say, cannot be procured by this method. Then recourse is had to—

3. *Maceration.*—This operation is conducted thus. For what is called pommade, a certain quantity of purified hog's lard and mutton suet are put into a clean metal pan; this being melted, the kind of flowers required for the odor wanted, are carefully picked and put into the liquid fat, and allowed to remain from 12 to 48 hours; the fat has a particular attraction or affinity for the oil of flowers, and thus, as it were, draws it out of them, and becomes itself by their aid, highly perfumed; the fat is strained from the spent flowers, and fresh are added four or five times over, till the pommade is of the required strength. For perfumed oils the same operation is followed, but in lieu of the lard and suet, fine olive oil, or oil of Ben, is used, and the same results are obtained. These preparations are called *Huiles Antiques*, or commonly French oils of such and such a flower. When neither of the foregoing processes give satisfactory results, the method of procedure adopted is by—

4. *Absorption.*—The odors of some flowers are so delicate, or, as the French call it, *en fleurage*, that the heat required in the previously named process would greatly modify, if not entirely spoil them; this process is, therefore, conducted cold, thus: Square frames, about 3 inches deep, with a glass bottom, say 2 feet wide and 3 feet long, are

* This tree, known as Lady Petre's pear tree, is still, (1848), flourishing at the Bartram garden, standing close by the house. [We have eaten pears from this tree, when dining at the Bartram house, which were of the highest quality, not surpassed by any specimens of Doyenne or butter pears. ED. HORT.]

procured; over the glass, a layer of fat (lard and suet) is spread, about half an inch thick, with a kind of plaster knife or spatula; into this the flower buds are stuck and ranged completely over it, and there left from 12 to 72 hours. Some houses have got 2000 and 3000 such frames; as they are filled they are piled one over the other; the flowers are changed so long as the plant continues in season, sometimes over a time of 2 or 3 months.

For oils of the same plants, coarse linen cloths are imbued with the finest olive oil, and stretched upon a frame made of iron; on these the flowers are laid, and suffered to remain a few days. This operation is repeated several times, after which the cloths are subject to great pressure to remove the now perfumed oil. As we cannot give any general rule for working without misleading the reader, we prefer explaining the process required when we come to speak of the individual flower or plant.

Whenever a still is named, or the article is said to be distilled or "drawn," it must be understood to be done so by steam apparatus, as this is the only mode which can be adopted for obtaining any thing like a delicate odor, the old plan of having the fire immediately under the still, conveying an empyreumatic smell to the result has become obselete in every well regulated perfumatory. The steam-still differs from the one described only in the lower part or pan, which is made double, so as to allow steam from a boiler to circulate round the pan for the purpose of boiling the contents, instead of the direct fire. In macerating, the heat is applied in the same way, or by a contrivance like the glue-pot, as made use of now-a-days. This description of apparatus will be found very useful for experiments, which we will suggest by-and-bye. The perfumes, as found in the shops of Paris and London, are either simple or compound; the former are called Extracts and the latter Bouquets, which are mixtures of the Extracts, so compounded in quantity that no one flower can be discovered as predominating over the odor of another; and when made of the delicate-scented flowers carefully blended, they produce an exquisite sensation on the olfactory nerves, and are therefore much prized by those whose wealth enables them to indulge in such pleasures. In a future article we shall explain the mode of obtaining the simple extracts, and if space allow, detail the formula for a few of the most approved bouquets, waters, &c. as Eau de Cologne and Arquebuzade. *P. Gardeners' Chronicle.*

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EXTINGUISHING FIRE. Several months have now elapsed since we drew attention to a most important contrivance for EXTINGUISHING FIRE WITHOUT WATER. Arrangements for the sale of the apparatus being now complete, we gladly return to the subject. We are so much accustomed to regard water as the only available material which can be employed in case of conflagration, that the attention of scientific men has hitherto been diverted from devising means of applying other well-known agents possessing the same power. And yet water is but a feeble ally, even when it can be had; while the having it at command involves such heavy and costly apparatus that it can scarcely be called available, unless in cities. As for country houses, villages or rural property, that may be said to be, by our present arrangements, consigned to almost inevitable destruction in case of fire.

It has occurred to Mr. PHILLIPS, a naval officer, that other agents may be employed, and with far greater effect than water, in extinguishing fire. We all know that flame cannot exist for an instant in carbonic acid gas, or in the air called nitrogen; but the difficulty has been how to obtain any such instantaneous and ample supply of them as would be capable of arresting a conflagration. That difficulty has been wholly overcome. By the sudden ignition of a mixture of charcoal, gypsum, and saltpetre, in a vessel containing water, a prodigious volume of carbonic acid, nitrogen, and aqueous vapour is instantaneously extricated, and when directed upon a fire, as instantaneously extinguishes it, or, as Mr. PHILLIPS says without exaggeration, annihilates it.

The apparatus by means of which this great result is obtained is not bulky, nor costly, nor liable to get out of order, nor tedious in its application, nor dangerous to keep, nor difficult to apply; it is the reverse of all these. With an apparatus which might, without the slightest inconvenience, be kept in a lady's bed-room, not bigger, in fact, than a muff-box, we have ourselves seen a fire of timber-shavings, tar, and combustibles, blazing so fiercely that it could not be approached within 20 feet without inconvenience, extinguished in a few seconds by a lad. Such a fire would not have been put out by a common fire-engine in a quarter of an hour, even if the machine, the men, and the water were all at hand when it broke out.

Persons in cities may be indifferent to fire, because they have the great insurance companies incessantly on guard; yet even they are not free from the most fearful risks. A curtain catches fire, wood-work follows, the firemen are sent for, they arrive, the flames are extinguished (perhaps); but the room at least is gutted, and the house is left a wreck, with windows smashed, and the furniture and fittings ruined by the inundation that is employed, An "annihilator" in a dwelling-house would render all this impossible; for, in its employment, nothing is perceptible except its marvellous efficiency, brought about by a cloud of pure vapour, scentless and incapable of soiling a muslin window curtain. A single discharge of this vapour would instantaneously extinguish the fiercest fire that ever raged in a London chimney.

If it is attended with these advantages even in a city, how much is its value enhanced when we consider the unprotected, and unprotectable, condition of all sorts of country property? Mansions and cottages, stables, ricks, and timber-yards, can scarcely be said to enjoy any protection from fire.

If burnt they may be paid for by the insurance companies; but there is no means of preventing their destruction when fired. No engines can be had; or no water can be found in sufficient quantity.

Every day brings examples of this. We find the following, for instance, in this morning's daily paper: On Tuesday morning, about 10 o'clock, a fire was discovered in a stack-yard, containing above 12 ricks of corn, in a village six miles from Nottingham. The Nottingham fire-engines were sent for without delay, but by 2 o'clock eight stacks of Wheat were consumed. The fire had by this time reached a barn filled with corn, which, with various carts and implements, were speedily consumed. The dwelling house was only saved by the great exertions of villagers and firemen; a corner of it was burnt. *The fire continued to rage until the evening.* Had an annihilator been at hand the fire would have been extinguished while a man was mounting a horse, in order to search for a fire-engine.

"The immense ratio," says Mr. PHILLIPS, "in which fire is multiplied by time, makes it an important desideratum to have at hand the means of extinguishing a fire as soon as possible after discovery. The rapidity of its progress over inflammable materials is such, that a fire extinguishable by one gallon of water will in five minutes require one hundred gallons, and in ten minutes, one thousand gallons." A supply which it is needless to say there is generally no means of procuring with the necessary promptness. An annihilator of proper dimensions is an effectual and incessant guard against all such contingencies.

That this contrivance will come into universal use we entertain no doubt; for that it will perform unerringly all that it professes to perform is certain. Of its merits, then, it is impossible to say too much; and we earnestly recommend it to our readers, who will be able to obtain full particulars concerning the details of its application at the Company's office in Leadenhall street, No. 105.—*Gard. Chron.*

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DRAINING WARMS THE SOIL.—It is reported that in a garden in Hampshire the TEMPERATURE OF THE SOIL has been raised 15° by draining heavy land 4½ feet deep. This if true is a prodigious gain—beyond anything that we could have anticipated as a permanent result—even in summer. Winter is of course excluded from the statement. Circumstances prevent our examining the statement in the case alluded to; but, allowing for some exaggeration, there can be no doubt that a result sufficiently approaching it to be of the greatest value, is attainable.

It is not now, for the first time, that the public attention has been drawn in the *Gardener's Chronicle* to this highly important subject. On the contrary we have on several previous occasions pointed out the undoubted fact that an increased temperature is one of the most valuable results of deep drainage; a more probable cause of the immediate improvement of the health of crops than the mere removal of water, or introduction of air into the soil. The nature of deep draining is in fact such as to render additional access of air to the roots of plants too inconsiderable to be appreciable. It is only when deep draining and deep trenching accompany each other that any great access of air to roots beyond what is customary can be anticipated. Where both are secured the effect is certainly magical.

We have now before us a piece of land which in 1845 was trenched and drained to the utmost depth which the nature of the situation would permit. The trenching was through London clay down to gravel to about 3½ feet; the draining was the same. It could be no deeper. In the winter of 1845–6 it was planted; and the following is now the height of some of the trees after four seasons growth. Ashes, 13 to 15 feet; Elms, 12 to 13 feet; Oaks 12 feet; Alders, 15 feet; Larch, 13 to 15 feet; Mountain Ashes, 11 to 13 feet. Yews have made from 11 to 24 inches growth; Douglas Firs. *transplanted between August and October* 1848, 15 to 31 inches; Cryptomerias, 21 to 24 inches; and Hollies 18 to 24 inches, during the last summer; and what is not a little remarkable, a Fuchsia has lived in this place without any protection, only dying annually down to the ground level. All the plants now measured were common nursery stuff when planted. Of course the whole plantation does not consist of trees that have grown at the same rates as those just mentioned; such a thing never occurred; but the trees are in general in the highest possible health and vigour in a cold tenacious clay, which before being trenched would hardly bear Grass enough to make it worth cultivation.

The improved condition of the land has no doubt contributed to this result; but we think it impossible to doubt that a considerable increase of temperature of the soil must have mainly contributed to produce such exuberant growth. Unfortunately this cannot now be made matter of proof, because no register was kept of the temperature before the trenching and draining were resorted to.

There exists in Essex, not a hundred miles from Brentwood, an orchard of Apples, Pears, Plums, and Cherries, which was planted about 22 years ago in a heavy clay trenched down to an iron pan on which it lies. For a few years the trees grew pretty well, that is to say, as long as their roots were near the surface and received the warmth of the summer's sun; but as they advanced downwards the growth became "small by degrees and beautifully less," till at last it ceased, and nothing flourished but an abundance of grey lichens, with which the branches were covered. The owner was advised to drain it 3 feet below the pan. In the first year afterwards vitality was roused so effectually that the lichens began to disappear, cast of by the swelling bark, and the last

stage of decrepitude had been exchanged by the end of the first six months for youthful vigour. In the second and third seasons after the draining, the trees made shoots from 4 to 5 feet long.

We have no doubt that the main cause of this remarkable and sudden change was the elevation of temperature consequent upon very deep drainage. Rain becomes heated by the surface soil, and carries its temperature with it as far as it sinks into the soil. The gain in this way is variously estimated at from 10° to 15° in summer —an enormous gain, which places plants on a hotbed—for soil heated 10° above the ordinary temperature is nothing else. Deep draining, therefore, not only offers considerable security against the introduction of roots into the water channels, but has the great and unsuspected advantage of considerably raising the temperature of the earth which is in contact with the drains, deep as they may be, for water cannot soak rapidly into earth without carrying warmth along with it. This is now so well understood by men of intelligence that it is superfluous to dwell upon it.—*Lindley, Gard. Chron.*

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Notes upon Violets—*Viola Odorata*.—There are few of our lady friends to whom a small bouquet of sweet scented violets would not be desirable in the chilly days of winter and the earlier stormier periods of spring. A great gardening author once stated, that if three flower-pots were kept in a window during the winter, one of the three should be devoted to the culture of violets. Right well did he know how dear that little flower was to the human heart! Years have rolled on, and life, with its stern duties, has somewhat shaded and blunted the little of romance and poetry within us, and yet the sight of the diminutive simple violet, when in a musing mood, has conjured up associations that enabled us, as of yore, to traverse the brake, and walk the dell, with companions—many of whom are gone—all are scattered—while their arch quizzing looks, and pealing voices, when to a favourite fair one the first-found flowers were stealthily and bashfully presented, are as present to our mind as they were upon the occasion when youth was young. And where resides the charm? The heartsease (*viola tricolor*) is not only frequently odoriferous, but it is often strikingly beautiful, from the variety of its markings and the harmonious combination and contrast of its colours; and yet, much as it is loved, and sweet and musical as is its name, it holds not the same place in our sympathies as the diminutive violet, that has little to attract the eye; but which, like other objects, human as well as floral, would pass unnoticed in the crowd were it not for the beneficence they shed—the fragrance which they yield. In this love of the violet—not merely from its poetic associations, but from its own usefulness and fragrance—we are furnished with a demonstration, that however men may be tickled with gaudy show, brilliant splendour, and pompous pageantry, yet in their heart of hearts they consecrate the highest place to retiring virtue—the unobtrusive generosity—to those "who do good by stealth, and blush to find its fame."

At one time virtue was made from the flowers of the sweet violet. A blue solution of its petal was, and is, used by chemists as a test for acids and alkalies: and even now the dried petals are used as a laxative, and a mitigator of pain in the case of children. When gathered with stalks and placed in water they will keep fresh and give out their perfume for a week; but if the flowers are dried in the shade, before they are too much expanded, they will retain their fragrance for a very long time. I am not aware that this is generally known: I found it out by accident. A waiscoat had not been worn for a twelvemonth—when put on it was quite fragrant with violets—on close examination, a few withered flowers were found in the pockets, which were quite odoriferous then, though placed there fully twelve months before. We shall now glance at a few of the best varieties.

The Russian Blue Violet is as hardy as our common one, that cheers with its perfume our banks and hedge-rows in spring. The flowers are much the same in size and colour, but possess the advantage of blooming more profusely and earlier, being generally in flower by the end of October. They flower best in loamy soil well drained. In light sandy soil they are apt to grow too much to foliage. They are propagated by seed, but more generally by offsets or runners, or by the dividing of the old plants. The old crown and runners produced during the summer, will all bear blooms. Sheltered with boughs, &c., at the foot of a wall, paling, or hedge, or planted in a bed with a frame set over them, and defended from frost, they will bloom freely all the winter. By filling some pots or boxes with young plants in September, they will be fitted for the window, setting them outside in open weather, and inside when frosty and stormy. A superior (or what is called a superior) one is being advertised, which we have not yet seen.

The Double Blue is more compact in its growth; it flourishes best in a deep loamy *well drained soil*. In such circumstances the flower will be larger and sweeter than upon lighter land. They produce their blooms from the old Crown, and also from the runners formed in the early part of summer. They may remain, therefore, several years upon the same ground, and little attention paid to cutting or pruning them. The flowers, however, will not be so fine as from plantations one or two years old. They will flower in pots, either for the windows or greenhouse, and will be forwarded, if planted under a glass case, with plenty of air, but they will not stand much forcing, the flowers when thus obtained neither being large nor rich in their perfume. When grown in pots the soil should be rich and loamy. The plants should be raised from off-sets planted out in April or May, kept fre

from runners, well watered during summer, and potted with balls in the end of September.

The Double White requires similar treatment; but altogether it is much more tender, and is generally a great favorite, among the ladies. The soil should be drier and of a lighter texture than for the blue variety, and, if exposed in a cold situation, a few laurel boughs stuck round it in winter will do good service.

The Tree Votlet is also a double blue. The flower is somewhat rounded and conical, while the common blue is flattish; this forms a distinctive feature. The flowers are seldom so large as the double common one, but its leaves are also generally smaller. Its chief recommendation is, that it flowers as freely and as early as the Russian; it will bloom out of doors, protected from storms, in frames and in pots during the winter. A few in pots placed in a window or in a greenhouse, will bloom profusely. It will also admit of being slightly forced and prefers a lighter soil than the common blue. All the violets may be grown in the tree form, and some years ago we amused ourselves with experiments in this direction, though we never could see much beauty in them when obtained. This will account for the common blue, &c., having been sent out under the name of the tree violet, and thus cause disappointment because they did not bloom early. The one under discussion seems, however, to take the tree form most easily. This is effected by cutting off the side shoots, and training to one shoot, with its crown, or tuft of leaves on its summit. By repeating the process for years, you may get plants with stems from six inches to two feet in length; but to approach the latter height, few or no laterals, or runners, must be allowed to grow until the desired height is attained, and then you will have something like *mops*, in miniature to look upon. When the stem has grown from six to eighteen inches in height, and the runners are then encouraged to grow, so as to hang in festoons from the crown at the top, and all are furnished with bloom, the plants present a very interesting appearance. Without this is done, the mere tree system had better be avoided. The plants will bloom as well, and look more natural, when covering the surface of the soil. Propagation is easily effected by planting out the runners in a shady place in summer, or inserting them under a hand-light in spring.

The Neapolitan Violet is deservedly a general favourite. The flower is large and double, lilac blue, and beautifully scented. It delights in a rich loam, with an addition of either peat or leaf mould. Unless in warm sheltered places it does little good out of doors, and even then will only generally produce its flowers late in the spring. Its great recommendation is, that it will bloom all the winter in frames or pits, and in pots in the conservatory, while it will stand a little artificial heat, without injury either to the size or the odour of the flowers. It may be forwarded in any place that would suit strawberries before they come into bloom; in other words where there is an average temperature of from 55° to 60°. In growing it in pits or in pots, young plants only should be used. A distinctive feature in its management arises from the fact, that the runners produced in summer will not bloom the following winter and spring. In preparing and growing plants for blooming, therefore, the runners should be carefully removed, that more strength may be thrown into the crown of the plant, and that the juices there collected, may be more perfectly organised by the removal of all shading and encumbering adjuncts. As the flowering season approaches its termination, runners may be allowed to grow for propagating, for the next season's supply. These may be taken off and inserted as cuttings, under a hand-light, upon a slight hot-bed, in April or May; when struck the hand-light should be removed, and by-and-by the plants should be transferred to a bed six inches apart, there to grow during the summer, in lightish rich loamy soil, well supplied with water, the ground frequently stirred, and *not a runner allowed to grow*. Where hand-lights are not come-at-able, the same object may almost as securely be gained by dividing the old plants into little pieces, planting them out like those raised from cuttings, and attending to them in a similar way. They may be lifted with balls, either for potting or planting under glass in September; in either case, drainage must be carefully attended to. In planting in a bed, lay down, first of all, a foot of faggots, &c., upon this place another foot of hot dung not much decomposed, and then a requsite layer of soil rather dry. The faggots will ensure you drainage, and enable you to throw a little heat into the bed, when necessary, by linings; the dung will encourage by its heat, the fresh rooting of the plants in the soil.

Place the plants in rows across the bed, just so thick that they do not touch each other; water each row thoroughly as you proceed, and then cover the surface with the dry soil, which will both prevent the evaporation of moisture from the roots, and keep the atmosphere of the frame or pit dry; to ensure which more effectually, and also prevent the ravages of slugs, &c., strew over the surface of the bed, when cleaning it, several times during the winter, with dry charcoal dust, quick-lime, and burnt earth, or even dry sand—an application that will be useful to all others, whether in the open air or under glass; and by attending to their wants, in protecting, air giving, and watering, you will be well rewarded. *R. Fish, in the Cottage Gardener.*

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THE FALL OF LEAVES.—The articulations are those parts of a plant where, at a certain period of their growth, solutions of continuity are made so naturally and regularly as to preclude the supposition that the dislocation is produced by accident. If we examine them when the shoots are young and vigorous, in the early spring, we shall find that there is a faint line externally that marks the position of the future joint, but that internally

there is scarcely any indication of its existence. At this time, if we call in the microscope to our aid, we shall find that, at the exterior line of demarcation, there is simply an increased deposit in the cells composing the bark, and a very minute process passing from its inner surface. The line of junction in the interior rarely presents any change more marked than a larger deposit of raphides or crystals there, than occurs elsewhere, or occasionally a deposit of some dark resinous material. Iodine, at this time, stains the whole tissue yellow, and scarcely detects the existence of a single granule of starch either in the leaf or stem. At this time the leaves require considerable force to separate them from the branches—so much so, that we sometimes find that they bring with them some of the wood from the parent stem; and if a branch is cut off and dried, the leaves cannot be torn from their attachment without great skill and management, showing that the joint is not yet complete. By and by, however, a change begins to take place; with the advance of the season, or from some other cause depending upon the situation and idiosyncrasy of the plant, the line of demarcation becomes well marked, and the eye can detect it throughout the whole of its course, internally as well as externally. The microscope shows at the same time, that the process of bark, which was at first rudimentary, has gradually increased, and that an evident change is taking place in the nature of the cells which contain the raphides. Iodine now tinges the proximal side of the junction a deeper hue than the distal, and we begin, here and there to see a blue dot, marking the existence of a starchy mass. As the season advances, this change becomes more apparent. The process of bark increases perceptibly, till it reaches the fibro-vascular bundles, when it receives a slight check, but soon continues its progress until these are nearly eaten through or absorbed, and the prolongation of the epidermis has entirely covered the surface of the articulation. At the same time (in the Poplar very distinctly, and in other plants more obscurely), a great change is taking place in the contents of the cells, on both sides of this prolongation, in the formation of a large quantity of starch, probably for the nutrition of the young leaf-bud, when it begins to expand next year. In the Poplar this deposit of starch takes place in the bark and wood at the base of the leaves to a great extent, so much so, that iodine renders a section completely dark; and not only at this spot, but for a short distance also on the distal side of the joint. If we now make a separation of the base of the petiole and the stem under the microscope, we shall find that the disruption takes place invariably through the cellular tissue, external to the prolongation of the epidermis, so that when it has been effected, the tree does not suffer from the effects of an open wound. The change that takes place in the cellular tissue prior to its disruption, appears to me to be simply a sort of self-disintegration; the cells contract and become rounder, and separate their walls from each other, so as to destroy their cohesion. I am very greatly inclined to think, from the generation of starch in their interior, that the process is altogether a *vital one*; that it is, in fact, the last act of life at the base of the petiole. We are strengthened in the belief of the vital character of the act, when we consider that the provision for the fall of the leaf, the formation of the articulation, has been going on from the earliest existence of the petiole, that it advances with the growth of the leaf, and is not complete until the leaf itself is of no more use. It must be borne in mind too, that it is not necessary that articulated leaves should be dead when they fall, as we frequently find them lying upon the ground green and apparently vigorous for a time; and if we examine any of them that have fallen naturally, we shall frequently, if not always, find that the base of the petiole is plump, fresh, and apparently living, which it would not be were its vitality entirely gone. The provision for the separation being once complete, it requires little to effect it; a desiccation of one side of the leaf-stalk, by causing an effort of torsion, will readily break through the small remains of the fibro-vascular bundles; or the increased size of the coming leaf-bud will snap them; or if these causes are not in operation, a gust of wind, a heavy shower, or even the simple weight of the lamina, will be enough to disrupt the small connections, and send the suicidal member to its grave. Such is the history of the fall of the leaf. We have found that it is not an accidental occurrence, arising simply from the vicissitudes of temperature and the like, but a regular and vital process, which commences with the first formation of the organ, and is completed only when that is no longer useful: and we cannot help admiring that wonderful provision that heals the wound even before it is absolutely made, and affords a covering from atmospheric changes before the part can be subjected to them. In the Copper-Beech, and some other trees whose leaves die some time before they fall off, the development of the starch-bearing cells on the distal side of the articulation does not take place; nor is there that disruption or disintegration of the cell-walls which is ordinarily met with. The joint, however, consists of laxer tissue, which is readily broken through by any accidental violence, such as wind and storms of rain, or by the growth of the new leaf at the base of the petiole at the commencement of spring. *Botanical Gazette.*

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Orchids from Seed.—I have read with interest the previous communications on the crossing and raising of Orchids from seed, which have appeared in your pages, and, from what has come under my notice, I have not the least doubt of the practicability of the affair. Dendrobium nobile crossed with D. chrysanthemum produced me a

pod of seed, and when the latter appeared to be ripe, I sowed it in three ways: some on a log, with natural moss growing on it, suspended in a shady part of the Orchid-house; some was sown on an inverted flower-pot, the inside of which was stuffed with sphagnum, and placed in a pan of water, which answered well, as far as keeping the pot moist was concerned, but neither of these two sowings vegetated. For the third sowing I procured a pan similar to the double flower-pot, but without a hole at the bottom. It was 12 inches in diameter and 3 inches deep. A cavity about an inch wide run all round between the outer and inner rim of the pan; this was filled with sand.

The inside of the pan was about 10 inches wide and 2½ inches deep; it was filled with water, in which was placed a piece of cork about 8 inches wide and 1 inch thick. I sowed the remaining portion of seed on the cork, which was then gently pressed under the water, and after being held there a short time, it was allowed to float; this caused the seed to adhere the better to it. A few pins were placed round the outer rim of the cork, in the lower edge, a little bent downwards, so as to be under the water; these pins prevented the cork from coming to the side, and caused it to form a floating island, on which no slug, centipede, or woodlouse could establish itself, and by which means the tender seedlings were preserved from the ravages of these destructive pests in an Orchid house. The whole was covered with a bell glass, which rested on the sand between the two rims of the pan, and placed in a shady part of the Orchid house. In about three weeks, two seeds had vegetated, and ultimately five plants appeared; they continued to grow, and seemed to be going on very well, the roots had fast hold of the cork; they were then about four months old.

At that time I began to take the glass off them at night, covering them again in the morning; after doing this for about three weeks, I took the cork out of the water and suspended it to the roof of the house, in which place it remained about three weeks; at that time the plants looked healthy, but the roots had ceased to grow, and their points turned brown. I then placed the cork in water and covered it over with the glass, in hope that the plants would recover; but they never made any progress; on the contrary, every time I looked at them they appeared to be getting less: the leaves withered and hung down, and in about three weeks the plants were all dead. I beleive that I did wrong in taking them out of the water when they were in active growth. Cork appears to be suitable for sowing Orchid seed on, for two reasons—first, it imbibes just sufficient moisture to cause the seed to germinate, and the roots to adhere to it; and secondly, when the plants require to be separated the operation can be done without breaking or injuring them, as the cork can be divided with a sharp knife, and the plants placed on a log or in a pot or basket without harm. *Gardeners' Chronicle.*

Dutch Bulbs.—About the end of August the nurserymen tell us by their advertisements that they "have just received their Dutch bulbs," and, as a matter of course, they are ready to execute our orders. For many years I have been endeavoring to procure a few early hyacinths about the beginning of September, so that I might prepare them to flower early in December, but to no purpose. Whether the Dutch growers or the English sellers are to blame for this I cannot say, but one thing is certain, and that is, if you want hyacinths to pot by the first of September, you must either take your own old bulbs or go to Holland for a set of fresh ones. The Dutch, who understand these roots much better than we do, pot all the hyacinths, which they bloom before Christmas, during the month of August, beginning about the second week of the month. A full account of their practice was given by one of themselves some years since in Loudon's *Gardeners' Magazine*, so that there can be no question at all on the subject. But in England we may whistle for them till after the middle of September. It is true we are set down as rich people, who can well afford to destroy a few paltry roots annually, but that is not the worst of the story. Many gardeners, and their employers too, would not care a fig for the destruction of a few hyacinths, provided they could get them into a good early bloom the first season, say by the first of December. However, as agitation is now at a discount—and long be it so—I suppose it is of little use to grumble; we shall be all right some day or other. Last year I put some hyacinths in fresh moss, rather late in November, to try how much earlier they would flower than others put into soil at the same time and under exactly the same treatment. Those in the moss were in flower ten days before the others, but this might be owing to the sorts, for they were from a mixed sample without names; but, after allowing the benefit of this doubt in their favor, I still think that any of the sorts will come sooner in fresh green moss, and I know they are much easier managed in moss than any other way; and I ought to know something about them, for, not to go farther back than last season, I flowered 600 hyacinths in pots, and nearly as many without pots, but as they were all in the flower-garden, I must not anticipate my own removal hence by saying more about them till I am fairly ousted from my present snug berth, from which, as the truth must soon be known, I am about to be turned out, to write about flower-gardening in the next volume, when all the flowers are nearly gone! However, I am now writing in my old department, and it is high time to pot all the forcing bulbs for the earliest crop, but any time between this and the middle of November will suffice to get in those for late sping use. I think I could give fair lists of the earliest and best kinds, yet I prefer trusting to the nurserymen for them, as they buy them from different growers, and every grower knows his own sorts best. They can al-

ways command a highish price for very fine sorts and for new ones, but their mixed kinds without names are as cheap as possible, and most of them are very good if well treated, but, like many other plants, the cultivation makes an essential difference. Ample directions were given in the first volume about the potting and after management of these bulbs, to which I refer the reader. *Crocuses* are the worst things to force, because, if they are excited too freely, they give nothing but a bunch of leaves. They do best if they are in the borders when taken up about the end of November or later, as by that time their flower-buds are well up, and if they are removed in lumps of earth, and the interstices just filled up when set in the pots, they take no hurt. There is a beautiful little *iris* which flowers naturally early in the spring, and is easily forced; it is called the *Persian iris*. The common double and single *daffodil* from the fields, flower two months earlier with a gentle heat, but they should all be potted in October in some light sandy mould, if you prefer that to moss. One seldom sees the *snowdrop* forced, but it will answer just as well as the crocus; and so will the *snowflake*, and, indeed, all the hardy bulbs which flower with us in the spring. Although I use the common expression "forcing," there need be no real forcing at all; and if I say *assist* them by a gentle heat, that does not convey the meaning much better. If our September weather, on the average of seasons, were to continue through the winter, it is very likely these spring bulbs would flower with us in February; and, by imitating the mild September weather indoors, we call it forcing.—*D. Beaton, in the Cottage Gardener.*

DOMESTIC NOTICES.

Boston Ventilating Stove.—We are no friends to stoves in general—convenient and popular as we know them to be—since we also know that they render the air impure, besides preventing all the usual wholesome ventilation which, in an open fire place, takes place through the chimney.

We saw in Boston, however, last spring, Dr. Clarke's patent ventilating stove, which appears to be an exception to most of its fellows, since it provides a constant stream of fresh air, which is warmed in its passage through the air-chamber of the stove,—an immense advantage over the common close stove.

These stoves, of various sizes, have been introduced into the common schools of Boston, where they are greatly approved of, and for the following reasons, according to Mr. Barnand.*

"1st. They are in fact furnaces, having distinct and capacious air-chambers.

2d. They insure, when properly set, that supply of fresh air which is indispensable to the proper ventilation of any apartment.

3d. The regulating distributor, which is movable or fixed, as may be desired, determines with accuracy the amount and temperature of the admitted air.

4th. The outer cylinder is never hot enough to burn the person or clothing, or to be uncomfortable to those in its immediate vicinity.

5th. They are constructed with the utmost regard to efficiency, durability, compactness and neatness of appearance."

Fig. 96 shows the exterior and interior view of one of these stoves. A hole is cut in the floor, over which the stove is placed, and a box or pipe

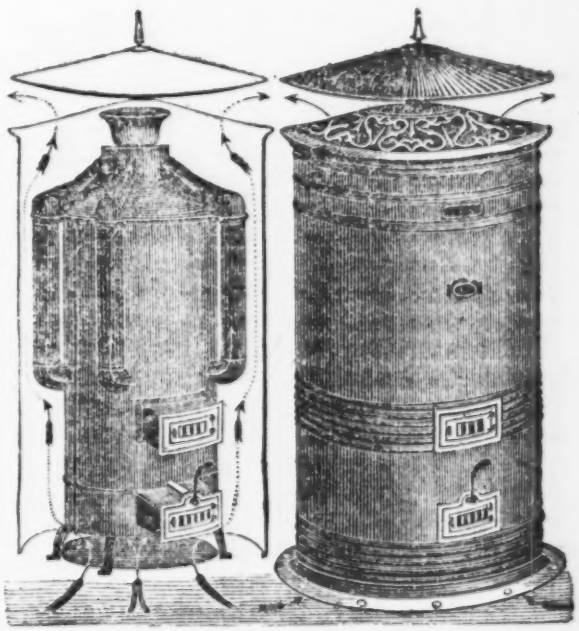

Fig. 96.—*Dr. Clarke's Ventilating Stove.*

is led from this hole through an aperture in the cellar, so as to supply it constantly with fresh air. At the upper part of the stove is the "regulating distributor," which is in fact a top, which rises and falls on a pivot screw, so as, with a slight turn with the hand, to widen or close the aperture through which the heated air enters the room. The stove itself is lined with fire-brick, so as to give a steady, moderate heat, which can be regulated at pleasure.

This stove is not only excellent for halls and apartments of dwellings, schools, &c., but it

* Barnard's School Architecture.

strikes us that it may be used as a substitute for a furnace in heating green-houses, by the Polmaise mode. It might be placed in a small chamber behind the green-house, or below the level of the floor, or perhaps under the back stage. In the latter case, the doors for putting in coals and taking out ashes should open into a separate little enclosed space, so that the dust made in lighting fires should not get upon the plants.

These stoves are made of various sizes, and may be seen at the warehouses, 51 Blackstone-street, Boston, and 351 Broadway, New-York.

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Report of the Congress of Fruit Growers.—We learn by a note from Mr. Parsons, the Secretary of this body, that the American Institute, which kindly offered last October, to print this report, has "decided to defer publishing it, (the report) until the type is set up for the State Agricultural report, in which the proceedings of the Institute are always included."

We regret this decision extremely, since it is not probable that the report will now appear till the latter part of winter. Had this statement been made at the meeting in New York, the report would have been published at once, by voluntary subscription of those present.

We suggest, in order to prevent this difficulty in future, that a small fund be contributed by the various Horticultural Societies, sending delegates to the Pomological Congress, to defray this expense of publishing the reports, &c., that the Congress shall not be dependent upon the action of other bodies for the prompt appearance of its proceedings, which are a matter of interest to a large number of persons in every state in the Union.

....

Great Sale of Green-House Plants.—A small ship load of exotics, chiefly Camellias, from the house of Seidell in Saxony, arrived in this country, and was sold at public auction on the 6th and 7th of December last, at 594 Broadway, New York. Great numbers of fruit trees are sent to this country, by foreign nurseries every year, but this is the first large consignment of green-house plants that we have seen offered at public sale. There were about 5000 plants. Probably two-thirds of these were Camellias, from 1 foot to 9 feet high, the tall ones rather lean and *slim* specimens. They brought prices from 25 cents to a couple of dollars each, probably averaging 40 cents—rather a poor speculation we fear, for the Dresden florist. The plants were in good order, but had mostly lost their flower buds—a misfortune for the salesman and the owner, as a Camellia is no Camellia in New York if it does not "promise to" bloom within 60 days. There were some dozens of tolerable Rhodsdondrons, and some fine lots of hardy Azaleas and Tree Pœonias; which two latter genera went off at fair prices.

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Box Edging.—I have examined the Horticulturist from the first to the last number, in quest of information how to propagate the different varieties of Box, especially the Edging Box, or Buxus sempervirens. I have tried to grow cuttings repeatedly, but with such poor success that I have come to the conclusion there must be a better mode than I am acquinted with, therefore you will oblige me if you can find space in the January Horticulturist for some advice on this subject. Yours, &c., *J. N. Dayton, Va.*

It is very easy to raise box edgings after the following mode: As early in the spring as the ground is settled, prepare the place where your edging is to be planted, not by digging, but by simply smoothing or levelling it. Next provide some cuttings, which should be from six to eight inches long—the leaves all being stripped off, except a tuft of about two inches at the top. Stretch a line, and after having pressed the soil under it firmly with the foot, next with a spade make a slit along it, deep enough to take in the cuttings. Then plant the cuttings by pushing them down this slit, until two-thirds of the cutting is below ground; afterwards take a small pounder and pound lightly along the whole line of cuttings so as to bring the soil closely in contact with the face and sides of the cuttings, as on this mainly depends their taking root well. They may now be well watered, and if the season is not very dry, will need no farther attention. In very dry soils it is a good practice, in order to ensure the growth of cuttings, to place boards edgewise, like the roof of a house, over the cuttings—leaving them there for six weeks, except when it rains. Ed.

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Smokehouse Apple.—In your valuable periodical, vol. 3., p. 333, is given a description and partial history of our favorite *Smokehouse* apple, that conveys an erroneous impression, which neither the writer nor the President of the Chester Co. Hort. So. designed.

Mr. Ashbridge may have introduced it to notice in his and the president's neighborhood, but Mr. Connard, a reputable nurseryman in the vicinity of its origin, (Lancaster Co., Penn., near Millcreek, hence the synonym Millcreek Vandevere,) introduced it to notice almost a half a century since. There are trees in that county with which I am acquainted, that have borne fruit more than thirty years.

Here then is a new variety of apple in cultivation more than a quarter of a century, and known to comparatively few out of its neighborhood; one, too, so much esteemed, that most of its cultivators there, if confined to only *one* or "three," would unhesitatingly select this; because it is an improvement in size, vigor and productiveness, on the old favorite Vandevere, which I perceive has received the sanction of the A. P. C. It will keep until April, and cooks well in September.

How illustrative is this, of the wide uncultivated field lying open for pomological investigation and improvement. Let us then, with renewed effort

exert ourselves for the diffusion of knowledge on this and kindred subjects, until every county in every state shall have a flourishing society Yours, respectfully, *J. K. Eshleman. Glenisle, Chester Co., Penn.*

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GRAFTING DIŒCIOUS TREES.—Should you think the following method of changing a diœcious to a monœcious plant, new to any of your readers, who may have an isolated persimmon, mulberry, Osage orange, or indeed any tree of that class, they can by inserting buds from another tree of an opposite sexual character, soon have fruit and seed. Some years since, a persimmon tree which had been productive of only staminate flowers, was budded in the usual manner, with buds from a fruit-bearing or pistillate tree of improved variety, and the branches thus produced, have for two successive years yielded an abundance of fruit. *Tyro. Chester Co., Penn.*

...:..

EARLY BEARING VINERIES.—Mr. ALLEN, as we all know, does not allow Grape vines to bear at all, till the third year. A writer in vol. 3d, p. 205, of the Horticulturist, giving an account of the system adopted at Mr. SPANG'S Grapery, at Pittsburgh, raises a moderate crop of grapes the second year after the vines were planted, and contends that his manner of cropping them can in no way be injurious to their future fertility. I should like your opinion on this subject, and of his system.

In your description of the Clinton Point Vinery, you state that the vines were planted July, 1848; of course the fine fruit which you speak of, was produced on them the *second season*. Allow me to ask, were those vines *cropped* in pots, in the Pittsburgh manner, or how? And if in that manner, was a new cane produced below the bottom of the pot, of sufficient length and strength to make bearing wood for next year. Your opinion on the matter is desired. *A Connecticut Subscriber.*

All practical men agree that it is likely to enfeeble the vine to allow it to bear much fruit till its third year. The mode adopted at Pittsburgh, by our correspondent there, is we think a good one to overcome the difficulty.

The vines in the house at Clinton Point, having made so extraordinary a growth of wood the first season—appearing stronger than most vines do the second year, in consequence of the extra care bestowed on the borders—were allowed to bear a considerable crop this season; and perhaps without serious injury to the vines—though it would have been safer on the whole to have allowed only a bunch or two to a vine till next year. ED.

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GREEN-HOUSE PLANTS AND GARDENERS.—Dear Sir—Your correspondent, M. C., of Williamsburgh, N. Y., accuses me in your last number, of having *vilified gardeners*. This assertion is gratuitious, make it who will, and a misconstruction of my words and meaning. Tis true I have vilified those who *call* themselves gardeners, and for that my professional brethren ought to thank me—those who usurp the name without the slightest claim to it, good or bad. I know there are many good gardeners in this country, but as Mr. MEEHAN remarks, they are the exceptions, not the rule. And who will assert that all those, —or even the half of them—who assume the name of gardeners in this country, really are so, either good, bad or indifferent ones. Yet the fact is unfortunately too true, that they are too often indiscriminately judged, and the value put upon a gardener is very little more than that set upon a common laborer. If my statements on this point be rightly understood, I have no fear of being charged with vilifying my practical brethren, whether native or foreign.

In criticising my obversations on summer watering green-house plants, which forsooth, he affects to treat in a *philosophical* way—"Where," he triumphantly asks, "does nature exclude a plant from the wholesome breezes of the day?" Where, I would reply, are the plants we cultivate in our hot-houses, subjected to arid parching winds, and found in those places in an healthy state? Give us the names of such plants, and their natural habitats?

"I do not think there is any great difference between the morning and evening temperature of the soil, in our warm months, whilst that of the water must be decidedly great." So says M. C. Has he found any difference between them, and what are the extent of his observations? I will remark here, to prove how totally unfounded are these assertions of M. C., that a difference of no less than 30 degrees has been found between the temperature of the soil in the morning and evening; but water never changes so much. It is a better retainer both of heat and cold, than earth, and a better conductor too. The difference between the temperature of the soil at these periods, will just be in proportion to its contained moisture, and its capacity of retaining heat will be in the same ratio.

Again he says, "I, *think* reason and science justify the practice of evening watering." Will he give us the reason and science that does so? Is it "simply because the oxygen that the plants absorbed the previous night, was restored to the atmosphere during the day?"

Again he says, "If plants are kept in a high temperature and damp *atmosphere, without air*" —what can we understand by this? I confess myself unable to conceive the condition which he refers to; perhaps he will enlighten us on this point.

Now, we know that atmospheric air consists of 77 parts of nitrogen, 23 of oxygen, about 4-2500 of carbonic acid, a variable quantity of aqueous vapor, and a trace of ammonia. This mixture, at a temperature of about 55 degrees, constitutes

a healthy atmosphere, and these elements are so adjusted by the laws of chemical combination, as to support the vital system of organized beings in a vigorous condition. Many causes, however, exist to derange the gaseous equivalents, and aridity is one of the greatest, which is invariably produced by a high temperature, in consequence of its increased capacity for carrying off moisture from every thing within its influence that possesses it. The organic elements of the atmosphere, are decomposed by the heat, and carried off by the rarified air, until carbonic acid, &c., remains in excess to act upon the vegetable functions.

It is a well known fact, that green-house plants are more frequently injured by an excess of carbonic acid than an excess of oxygen. This can be proved simply by the presence of a substance having an affinity for it, such as hydrate of lime, which will soon be converted into a carbonate, and will absorb 6 times the quantity of carbonic acid, that vegetable beings covering the same space, in the same period, would have consumed in the process of assimilation. This fact may account for the suffocating smell so frequently felt in hot-houses, and which is only perceptible when the atmosphere is deprived of its proper equivalent of oxygen and aqueous vapor. And hence the necessity of artificial evaporation.

We might view this in another light, by considering the action of these gasses on the vegetable system. We cannot tell the process or the power by which these elements are converted into cellulose and proteine. Chemical affinity appears to be controlled and directed by the principle of vitality. But we know the substances which enter into these combinations, and the result of their action under certain conditions, and when these conditions are unfavourable, the effect ceases to be produced.

Let us take as an example, the cellular tissue, which is formed from the elements of carbonic acid and water, by the separation of oxygen. Twelve equivalents of carbonic acid, with ten equivalents of water. C. 12. O. 24+H. 10, O. 10=C. 12, H. 10, O. 10+10 O; or one equivalent of cellulose and ten of oxygen. In the formation of proteine, the elements of ammonia are added to those of carbonic acid and water; forty equivalents of carbonic acid, with fifteen of water, and five of ammonia=one equivalent of proteine, and eighty-three of oxygen. Proteine, under certain circumstances, absorbs oxygen, and is decomposed into ammonia and humid acid. This last is formed from woody fibre by the loss of the elements of water and carbonic acid.

With these facts before him, I will now ask M. C. by what method of reasoning he supports his hypothesis, that an arid atmosphere is beneficial to the process of assimilation, or upon what foundation he condemns me for keeping the house *pretty close*, and saturating the atmosphere. His error will appear the more flagrant when we consider the difficulty of saturating the atmosphere, at high temperatures. It has by calculation been found, that a house containing 4000 cubic feet of air, will by the admission of currents of air heated to 100 degrees, carry off upwards of 20 gallons of water in 24 hours. Our atmosphere at the surface of the earth, is frequently above this in the hot days of summer, and its effects on vegetation are known to every one. Yours, *R. B. Leuchars. New Haven, Ct., Dec.* 11, 1849.

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Healthy and Diseased Foliage.—Dear Sir—Has the matter referred to in the extract from Liebig, which I herewith send you, anything to do with leaf-blight in fruit trees, and especially the pear tree? *C. Smith. Newport, N. Y., Dec. 10th*, 1849.

[It no doubt bears decidedly on the subject, and we commend it to practical cultivators:]

"It is by means of moisture that plants receive the necessary alkalies and salts from the soil. In dry summers a phenomena is observed, which when the importance of mineral elements was unknown, could not be explained. The leaves of plants first developed and perfected, and therefore nearer the surface of the soil, shrivel up and become yellow, lose their vitality, and fall off while the plant is in an active state of growth, without any visible cause. The phenomena is not seen in moist years, nor in evergreen plants, and but rarely in plants which have long roots, nor is it seen in perennials in autumn and winter.

"The cause of this premature decay is now obvious. The fully developed leaves, absorb continually, carbonic acid and ammonia from the atmosphere, which are converted into elements of new leaves, buds, and shoots, but this metamorphosis cannot be effected without the aid of the alkalies and other mineral substances. If the soil is moist, the latter are continually supplied to the adequate amount, and the plant retains its lively green color; but if this supply ceases from want of moisture to dissolve the mineral elements, a separation takes place in the plant itself. The mineral constituents of the juice are withdrawn from the leaves already formed, and are used for the formation of the young shoots, and as soon as the seeds are developed, the vitality of the leaves completely ceases. These withered leaves contain only minute traces of soluble salts, while the buds and shoots are very rich in them."

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Special Manures.—I have been much pleased as well as profited by the several articles on "*Special Manures*," published in the Horticulturist, and I herewith send you a statement of the manner in which I treated a tree in my own garden, and its results, though whether it is a "*case in point*" I leave you to judge.

In the spring of 1845, I set two grafts of the White Doyenne on the common quince. They were transplanted the succeeding fall. During the summer of 1848 both trees blossomed, and one of them set one pear, but after it had grown about

half the usual size, it commenced cracking, and ceased growing. I showed the pear to a person who had seen those that cracked at the east, and he said it was affected the same as those. My first impulse was to dig up the trees, believing that the scion came from a diseased stock and therefore would prove worthless. But on reflection I concluded to let them stand, and try the effect of "Special Manures." In the fall I prepared a compost of muck and ashes, as recommended by you, and applied about half a buhsel to each tree, which was slightly dug in. Last spring, I applied about four quarts of burned bones to each tree, and formed a mound about each tree with compost, about six inches high and three feet across, so as to cover up the junction of the graft with the stock. On examining the trees I found at the junction of almost every limb with the body of the tree a crack in the bark, extending from ¼ to ½ an inch up the limb, and also about the same distance up the body. Around these cracks the bark was dead to a greater or less extent; in several places it extended almost around the body of the tree, and in one case entirely around. I cut off the tree at this last place, which was some 18 inches from the ground. I cut out all the dead bark and covered the wounds with the shellac preparation, recommended by you. The past summer each tree has borne six as perfect pears as any one could ask for, and the trees have made a thrifty and healthy growth. The wounds made by cutting out the dead bark have grown over, and there are no signs of the bark cracking again. The trees were set in a soil of heavy clay, which had been taken, about eighteen months previous, from several feet below the surface, and had been manured and cultivated the summer previous to the trees being set. What, in your opinion, was the cause of the pears cracking last year and being perfect this? And what was the cause of the bark cracking? Yours, respectfully, *M. L. B. Lockport, Dec. 17th*, 1849.

Our opinion is that the bark and fruit cracked from unsuitable soil, or unhealthy constitution in the tree or from both. Special manure would of course be the main remedy for such a diseased condition. Ed.

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Building Vineries.—Your critic in his critique for this month, asks of you cost of structure, and other information, of Mr. Van Rensselaer's vinery, at Clinton Point. I shall be able to tell you, when spring opens sufficiently for out-of-door work, exactly what it costs *here*, to put up such a vinery as Mr. Van Rensselaer's, on a smaller scale—that is forty two feet in length, with height and breadth as his. Meanwhile, I can tell you, that owing to your representations of the peculiar advantages of the vinery at Clinton Point, I sent a carpenter there to examine it; and his report, when he brought the plan of it to me on his return, was that he could build a vinery at one third less cost, in consequence of what he had seen there. I may mention that the person I sent understands his business thoroughly, and had just completed a vinery on the ordinary plan, at a country seat in this neighbourhood.

The difference between, say four hundred dollars and six hundred dollars, is something. And the greater pleasure of having a vinery, or anything else, to effect a certain purpose, at a reasonable cost, instead of an extravagant, is something more. So that I think the country loving community is under obligation to Mr. Van Rensselaer for having brought practical good taste to bear on this matter. *A Subscriber. Philadelphia, Dec. 17th*, 1849.

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ANSWERS TO CORRESPONDENTS.

Carnations.—*R. Early*, (Lynchburgh, Va.) You will find a very valuable practical article on this plant in the first volume of this journal, p. 73.

Seedlings.—*D. B. Williams*, (Mendham, N. J.) You may undoubtedly take a crop of roots from between the drills of seedlings, but probably at the injury of the latter, unless your soil is very deep and rich. Instead of planting a row of corn between the rows of cuttings or slips, you had better cover the ground with litter, or some sort of refuse, to preserve its moisture above the slips; corn roots do more harm by exhausting the moisture in the soil, than good by shading the cuttings. Do you mean evergreen seeds or plants? A good manure for them would be *leached* ashes and fine chip manure—one third of the former to two thirds of the latter.

Burying Roots.—*Rev. J. R. K.* (Warren, Ct.) You inquire if maple trees of 20 years growth, which have had the ground raised on the north side, and 2 feet south of the trunks on the south side, will be seriously injured by it? We think not, as there is a sufficient portion of the roots in the natural position on the south side to enable the tree to go on till the roots on the north side send up fibers in the new soil under which they are buried. We have seen elms buried 3 feet deep without injury, by first piling stones over the roots, and then covering the soil over the stones.

Pruning large trees.—*J. H. E.* (Chester Co., Pa.) We should prefer to wait till the cold weather is quite past—say with you the 1st of March, before pruning the large limbs of pears or apples. The engrafted branches may be headed in at that time. If any one is compelled to prune in mid-winter—at the north—then he should always use the shellac solution, brushing over the wound as soon as made, otherwise a rotten spot will be formed and the wound will not heal readily. We know nothing definite, regarding the two fruits you refer to, beyond what we have published.

Tender Evergreens.—*Enquirer*, (Canandaigua, N. Y.) The varieties of Rhododendron Ponticum will not stand your winters, unless protect-

ed by turning a box over them, or enclosing them with a rough board frame to keep the sun and the sudden changes of weather from affecting them. Portugal laurel requires the same treatment here.

Books.—*W. W.* (Baltimore.) Most of what is new, in the late edition of *Mr. Thomas'* Fruit Culturist, has been *borrowed* from this Journal. A new edition of Lindley's Horticulture will be issued in the spring. Paxton's Botanical Dictionary is the work you need. It may be had at Wiley's, 161 Broadway, New York.

Plants in Pots.—*A Lady Subscriber,* (Geneseo.) Your camellia does not bloom because it did not set any flower buds last spring when it made its growth for the season, and it probably did not form buds then, from want of proper soil or water at that time. It is precisely during the the two or three weeks *while it is growing* that it requires especial care. At that time plenty of water, air, and sun, and twice a week some guano water, will give you an abundance of flowers next year.

Apples.—*M. P. S.* (New Haven.) The apple you sent us, is Peck's Pleasant, the finest apple in New England when in perfection. It varies much out of your state, and we have received some lately from Rochester, N. Y., which were so comparatively flavorless, that we scarcely recognised them.

Grafts.—*A Nurseryman,* (St. Louis.) Grafts may be cut now as well as later. Bury them half their length in some soil in the cellar. Root grafting is carried on all winter by many nurserymen, and the stocks laid away in earth—in root cellars—till planting time comes, when they are all ready for going into the rows.

Apricots.—*James Thompson,* (New-York.) This tree is very liable to die suddenly, and we think chiefly from the injurious effects of sudden freezing and thawing of the bark at the surface of the ground. Try straw sheathing round the limbs.

Insects.—*J. L. Harris,* (Milledgeville, Geo.) It will require a good deal of time and labor to prepare such an article with illustrations as you suggest. Perhaps we may be able to present such an one in the course of two or three months.

PENNSYLVANIA HORTICULTURAL SOCIETY.

The stated meeting of this society was held on Tuesday evening, Dec. 18, 1849. The President in the chair. The display was very fine for the season, and the meeting well attended.

The following premiums were awarded by the committee on plants and flowers: For the best three hot-house plants, named varieties, to Ben Daniels, gardener to C. Cope; for the second best ditto, to Robert Scott, foreman to Robert Buist. For the best three green-house plants, named varieties, to Ben Daniels; for the second best ditto, to Robert Scott. For the best collection of plants in pots, to James Bisset, gardener to James Dundas; for the second best ditto, to Ben Daniels; for the third best ditto, to Maurice Finn, gardener to John Lambert. For the best bouquet or design of cut flowers, to Ben Daniels; for the second best ditto, to Patrick Burke, gardener to J. Longstreth. For the best basket of cut flowers, to Ben Daniels; for the second best, to Wm. Finn. For two small and neat baskets of cut flowers, a special premium to Joseph Cook.

By the committee on fruits: For the best half peck apples, Roman stem, to John Perkins, Morristown, N. J.; for the second best ditto, Kaighn's Spitzenbergh, to the same. For the best seedling pear, the Chancellor, exhibited during the present year, to ——, a premium of five dollars. For the best seedling peach, the Eliza, exhibited during the present year, to Gerhard Schmitz, a premium of five dollars.

By the committee on vegetables: For the best and second best displays of vegetables, by Commercial Gardens, to Anthony Felten; for the best display by amateurs, to Ben Daniels, gardener to C. Cope; for the second best ditto, to Maurice Finn, gardener to John Lambert; for the third best ditto, to Wm. Johns. And for a fine display of cauliflowers, a special premium to Anthony Felten.

Objects Shown—*Plants*—By James Bisset, gardener to James Dundas,—Dendrobium moniliforme, Gesnera zebrina, Goodyera discolor (in bloom since September exhibition,) Azalea indica alba, Habrothamnus elegans, Abutilon venosum, Epiphyllum truncatum, Daphne odorata, Euphorbia jacquiniæflora, and numerous cut flowers of the Bignonia venusta, suspended from an arch.

By Robert Scott, foreman to Robert Buist,—Habrothamnus elegans, Manettia bicolor, Gesnera oblongata, Correa multiflora rubra, Erica Willmoriana, Epacris impressa, E. nivalis, E. copæ, E. coccinea.

By Ben Daniels, gardener to C. Cope,—Gesnera jerroldiana, (*new.*) Gongora maculata, G. major, G. picta, Oncidium papilis, Brassavola Perrinii, Alphelandra Ghiesbrechtii, Poinsettia pulcherima, Euphorbia fulgens, Rhipsalis swartziana, Manettia bicolor, Gesnera zebrina, Columnea grandiflora, Cypripedium venustum, C. insigna, Gloxinia Teucherii, Cineraria (seedling,) Camelliæ—var., Saco magnifique, Gilesii, &c.

By Maurice Finn, gardener to J. Lambert,—a beautiful collection of plants in pots.

Bouquets—by Ben Daniels and Patrick Burke. *Floral baskets*—by Ben Daniels, Maurice Finn and Joseph Cook.

Fruits.—By John Perkins. Apples—Roman Stem and Kaighn's Spitzenbergh. By Isaac B. Baxter. Pears—Columbia (from graft of last year,) and Passe Colmar. By Ben Daniels Fruit of the Cereus repandus and opuntea vulgaris, (edible.)

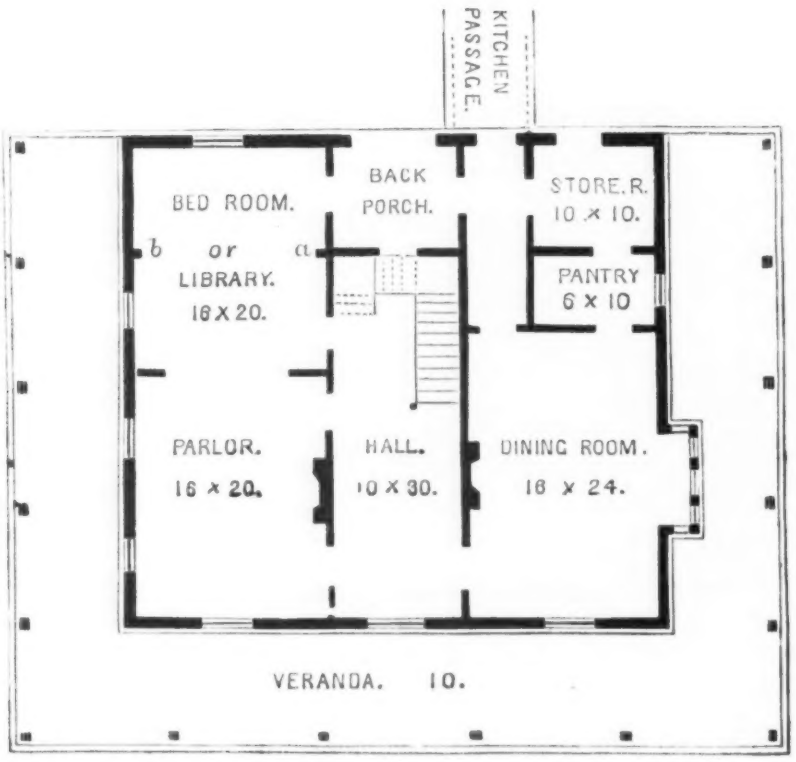
Vegetables.—By Anthony Felten, a fine display.

By Ben Daniels,—a fine collection, among which were asparagus, tomatoes, &c. &c.

By Morris Finn and Wm. Johns,—good displays.

Edwin Meredith, Sec'y pro tem.

A SOUTHERN COTTAGE VILLA



PRINCIPAL FLOOR.